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THE INTERNAL RESPONSIBILITY SYSTEM IN ONTARIO MINES

FINAL REPORT

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Ontario

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Ce document est aussi disponible en français.

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Bernie Deck	Provincial Mining Co-ordinator, Ministry of Labour
Ric deMeulles	General Manager, Mining and Aggregates Safety and Health Association
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Fergus Kerr	Director of Mining Sector, Workplace Safety and Insurance Board
Don McGraw	Chair, Safety and Health, United Steelworkers of America
Tim Millard (Committee Chair)	former Deputy Minister of the Ministry of Labour
Ron Rafuse	Superintendent of Transportation, Inco Ltd.
Andy Rickaby	Vice-President, Mineral & Environmental Operations, Denison Mines Ltd.
Al Robb	Representative, Communications, Energy and Paper Workers Union
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SYNOPSIS

INTRODUCTION

This is the third and final report of a study on the Internal Responsibility System (IRS) in Ontario underground mines.[1] Our main aim has been to develop an audit tool through which the health of the Internal Responsibility System in a mine can be assessed. This report describes the validated audit tool, as a result of its being tested in a trial audit on six mines, and contains suggestions for further improvement of the tool and for its administration by others.

The study has been conducted with the oversight of the IRS Steering Committee consisting of government, industry and labour representatives. This committee selected the six mines at which to test the trial audit tool—four hardrock mines (two gold mines and two base-metal mines) and two soft-rock mines:[2]

Falconbridge Ltd. Kidd Creek Mine Timmins	Inco Ltd. Creighton Mine Copper Cliff	Georgia Pacific Corp. Caledonia Mine Caledonia
Sifto Canada Inc. Goderich Mine Goderich	Placer Dome Canada Ltd. Musselwhite Mine Thunder Bay	Teck-Corona Operating Corp. David Bell Mine Marathon

These mines were not a random sample of Ontario underground mines but were chosen so as to provide a broad range of both mine types and health and safety performance. In addition, the Steering Committee selected two mining-contractor operations to which the audit tool was to be administered, with the primary purpose of investigating the IRS interface between mine and contractor employees. The visits took place from the end of February to the beginning of April 2000.

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1 The two earlier reports were: I.M. Plummer, P.W. Strahlendorf, and M.G. Holliday, *THE INTERNAL RESPONSIBILITY SYSTEM IN ONTARIO MINES—Interim Report #1: Description of the IRS* (delivered to the IRS Steering Committee, 30 November 1999); and, I.M. Plummer, P.W. Strahlendorf, and M.G. Holliday, *THE INTERNAL RESPONSIBILITY SYSTEM IN ONTARIO MINES—Interim Report #2: The Pilot Audit* (delivered to the IRS Steering Committee, 7 February 2000).

2 An earlier version of the audit tool was tested at two mines (also selected by the IRS Steering Committee)—Craig Mine, Onaping; Campbell Mine, Red Lake—in the pilot phase of the project. The experience gained led to modifications in the questionnaires that were then administered in the trial audit.

THE INTERNAL RESPONSIBILITY SYSTEM (IRS)

With the assistance of the IRS Steering Committee we produced a description of the Internal Responsibility System. The roles and responsibilities of the contributors to the IRS, as well as a number of processes important for a successful IRS, are all set out in this description. The model of the IRS we developed is consistent with previous descriptions in the Ham and Burkett Reports. The questionnaires administered in the trial audit and our interpretation of the responses were based on the description.

Description of the IRS

The IRS is a system, within an organization, where everyone has *direct* responsibility for health and safety as an essential part of his or her job. It does not matter who or where the person is in the organization, they achieve health and safety in a way that suits the kind of work they do. Each person takes initiative on health and safety issues and works to solve problems and make improvements on an on-going basis. They do this both singly and co-operatively with others. It is one of the *personal* responsibilities of a company President to ensure that the entire system of direct responsibility for health and safety within a company is established, promoted and improved over time. Successful implementation of the IRS should result in progressively longer intervals between accidents or work-related illnesses.

In addition to those with *direct* responsibility, a number of people and agencies have *contributive* responsibility for health and safety. Within any organization, the Joint Health and Safety Committee (JHSC) has a key contributive part:

- in health and safety in general, and
- in making the IRS work well.

The organization's health and safety staff[3] also play a *contributive* role.

Assisting the IRS from *outside* the organization are the Safe Workplace Associations (e.g. MASHA), the Ministry of Labour (MOL), Unions[4] and others. The MOL may exercise direct authority to resolve health and safety problems in the

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3 These include the Health and Safety Co-ordinator; Hygienist; and Nurse, etc.

4 The members of the Union, and their representatives who are employees of the employer are "internal" to the employer's organization. The Union will also have health and safety resources located "external" to the employer's organization.

workplace, principally through its inspectors issuing orders. Listed in Table A are the direct and contributive components.

Keys to a Successful IRS

1. Everyone must have a sincere wish to prevent accidents and illnesses;
2. Everyone must accept that accidents and illnesses have causes that can be eliminated or greatly reduced;
3. Everyone must accept that risk can be continually reduced, so that the time between accidents and illnesses get longer and longer;
4. Everyone must accept that health and safety is an essential part of doing his or her work (health and safety is not an extra, it is part of doing the job);
5. Every person must have a clear understanding of what he/she is responsible for; what he/she can do to change matters; and when things must be done;
6. Every person must be regularly asked to explain what they have done to ensure health and safety on the job and in the workplace;
7. Everyone must have a clear understanding of their own skill, ability and limitations, and should have the capacity to carry out their responsibilities;
8. Everyone must attempt to avoid conflict when trying to reduce risk;
9. As an individual, each person must go beyond just complying with health and safety rules and standards, and strive to improve work processes to reduce risk;
10. When an individual cannot reduce risk by him/herself, then they must cooperate with others to go beyond just complying with health and safety rules and standards, and strive to improve work processes to reduce risk;
11. Everyone must understand the IRS process, believe in it, and take steps to make it effective at all levels in the organization; and
12. No one should be fearful of reprisals when using IRS processes.

AUDIT APPROACH

The audit tool consisted of four major components:

- administration of questionnaires to individuals that represent each level of responsibility associated with the IRS;
- follow-up interviews with a representative sample of questionnaire respondents;

TABLE A: *Participants with Direct Responsibility in the IRS and Those with a Contributive Role*

PARTICIPANTS IN INTERNAL RESPONSIBILITY SYSTEM	
Direct Participants	**Contributive Participants**
Members of Board of Directors Executives Managers Supervisors Workers	INTERNAL Joint Health and Safety Committee Health and Safety Staff[5] Engineers[5] Other Staff[5] Union(s)[6] EXTERNAL Union(s)[6] Safe Workplace Associations Workers' Centre Ministry of Labour WSIB Suppliers

5 Although these parties are *contributive* to the IRS in the workplace in general, they are also *direct* parties to the IRS in their own workplaces.

6 See Footnote 4

- observation and discussion of the situation in the workplace; and
- documentation selected by the mine's JHSC to provide examples of how their IRS was being implemented.

There were 10 different questionnaires—for six levels of direct responsibility and for four levels of contributive responsibility:

Direct Responsibility	Contributive Responsibility
Company Directors	Co-chairs of the JHSC
Senior Executive Officers	Certified Members
Mine Managers	OHS Specialist
Senior Supervisors	Ministry Inspectors
Front-line Supervisors	
Workers	

Each questionnaire consisted of some 30 to 40 questions. With the exception of the first question (which was in multiple-choice format), there were two types of questions. One type asked whether the respondent "strongly disagreed", "somewhat disagreed", "somewhat agreed", or "strongly agreed" with a statement concerning an aspect of the IRS as it applied to the respondent's work. The other type of question asked for direct information in the form of "Yes/No" answers.

At each mine, we administered questionnaires to about 25 workers (the numbers varied between 14 and 27), five front-line supervisors (the numbers varied between 3 and 7), three middle managers (the numbers varied between 0 and 5), the mine manager, the two JHSC co-chairs and two certified members, and the health and safety co-ordinator. At each site, we conducted follow-up interviews with about one third of the workers and front-line supervisors, about half the middle managers and JHSC members, and the mine manager and the health and safety co-ordinator. We also informally interviewed workers as we took a tour of the underground mine. In addition, we asked each mine to provide us with documentary evidence that they felt would serve to illustrate functioning of the IRS at the site. Off site, we administered questionnaires to the MOL inspector(s) responsible for the mine, and attempted also to administer questionnaires to two senior executives and a company Director for each mine, and conducted follow-up interviews with all who answered the questionnaires. The numbers of questionnaires administered and interviews carried out are presented in Table B.

TABLE B: *Tally of Questionnaires Answered and Follow-up Interviews Conducted During the Trial Audit*

	QUESTIONNAIRES ANSWERED	FOLLOW-UP INTERVIEWS
COMPANY DIRECTOR	4	4
SENIOR OFFICERS	10	9
MINE MANAGERS	8	8
MIDDLE MANAGERS	19	13
FRONT-LINE SUPERVISORS	34	18
WORKERS	151	56
CO-CHAIRS	11	8
CERTIFIED MEMBERS	15	13
H&S CO-ORDINATORS	7	7
INSPECTORS	8	8
TOTALS	**267**	**144**

AUDIT VALIDATION

To validate the audit tool, we compared responses to groups of questions with the safety record of the mine. The safety statistic we primarily used of this comparison was total medical injury (TMI) frequency.[7] In order to make the comparison meaningful, we needed to calculate frequencies over a reasonably long period. Because the safety statistics of one of the six mines only started in 1997, we used the period 1997 to April 2000.

Complete analysis of the vast amount of data collected from the six mines visited in the trial audit would have taken many months more than the time and resources available to this project. Accordingly, in the validation, we chose to concentrate on two facets of the data contained in the questionnaires. One involved a question that probed what respondents believed the IRS ***should be***, and the other looked at groups of questions that have a bearing on various aspects of actual IRS performance.

Individual Perception of the IRS

The first question (Question 1a) on every questionnaire was a multiple-choice question and consisted of 13 separate statements. It asked respondents about what they thought the IRS ***should be***, and was administered to all levels in the responsibility system. Because the same question was asked of everybody, the responses give a very good overview of the current understanding of the IRS at the mines—see Table C.

The overall understanding of the IRS at the mines involved in the trial audit, using the scoring scheme in the footnote below,[8] stood at 70 percent. In general, understanding improves as one moves up the line of direct responsibility within the mine site. Mine

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7 We also looked at lost-time injury (LTI) frequency. But, because LTIs are of considerably smaller magnitude than TMIs, correlations with questionnaire responses were not as obvious.

8 SCORE: Each individual's understanding of the IRS was scored by assigning 12.5% to each of **a**, **c**, **d**, **f**, **h**, **k**, **l**, and **m** and –20% to each of **b**, **e**, **g**, **i**, and **j**, and adding the result. Thus respondents would score 100% if they ticked **a**, **c**, **d**, **f**, **h**, **k**, **l**, and **m**, but no others, and 0% if they ticked all 13 alternatives or if they ticked none at all (–100% would be achieved if **b**, **e**, **g**, **i**, and **j**, but no others were ticked). In cases where there were negative scores, we assigned 0%.

TABLE C: *Summary of Answers to Question 1a as Percentages*

"I believe that the Internal Responsibility System (IRS) **should be** where:	Wkr n= 151	FLS n= 34	MM n= 19	Mgr n= 8	Exec n= 10	Dir n= 4	JHSC n= 26	HSC n= 7	Insp n= 8	Avg. n= 267
a) everyone (from the rockface to the Boardroom) looks after health and safety as part of doing their job;	88	91	100	100	100	100	100	100	100	**92**
b) the workers are the only ones to look after their own and co-worker safety;	11	6	0	0	0	0	0	0	13	**7**
c) the supervisors and managers co-operate with the workers to head off and solve problems;	71	94	95	100	80	100	96	100	100	**81**
d) we all work together to make things better by reducing or eliminating the health and safety risks;	81	97	95	100	100	100	96	100	88	**88**
e) the Health and Safety Committee is directly responsible to make the workplace safe;	24	15	11	13	20	50	19	0	25	**21**
f) the Company President has some responsibility for the worker's health and safety;	67	79	79	100	100	100	81	86	78	**75**
g) the supervisor only makes sure the workers follow the rules and procedures;	9	3	0	0	0	0	4	0	0	**6**
h) if the worker cannot fix the problem, the supervisor will help find the answer;	77	91	79	100	80	100	88	86	75	**82**
i) if the worker cannot fix the problem, the only way out is to refuse to work;	11	3	0	0	0	0	0	0	0	**7**
j) the Health and Safety Coordinator finds the problems and tells the workers to fix them;	11	6	0	0	0	0	4	0	0	**7**
k) the Health and Safety Committee are resources;	66	79	79	100	100	100	92	100	88	**75**
l) the Health and Safety Committee help resolve issues when other ways fail;	68	76	89	50	40	25	77	57	88	**70**
m) we go beyond fixing problems and try to improve the health and safety in the work processes."	66	79	84	100	90	100	88	100	88	**75**
"SCORE"	**60**	**80**	**85**	**91**	**82**	**81**	**85**	**91**	**82**	**70%**

workers, as a group, show the lowest level of understanding and mine managers show the highest; understanding decreased somewhat at the corporate level. The health and safety component (JHSC members and health and safety co-ordinators) also showed high levels of understanding. Similar distributions in understanding were also seen when the mines were looked at on an individual basis.

The success of this multiple-choice question in giving a "snapshot" of the level of understanding of the IRS at a mine site became apparent to us early in the trial audit visits. And, because of this, we took the opportunity to combine the multiple-choice question with a supplementary question asking the respondents for an assessment of how the IRS was actually working at their workplace. In this question, respondents were asked to say whether they "strongly disagreed", "somewhat disagreed", "somewhat agreed", or "strongly agreed" with the following statement: "Given my answer to the Question 1a, I believe the IRS is working effectively in my workplace".[9] This supplementary question (Question 1b) was used at four of the six mines.

Working on the assumption that individual respondents' assessments of the IRS in their workplaces (i.e., Question 1b) are of greater validity the higher they scored on the understanding part of the question (i.e., Question 1a), we multiplied each individual's score for 1b by their score for 1a. The resulting product is a measure of the effectiveness of the mine's IRS according to that individual. We looked at the effectiveness of the mine's IRS, as judged by mine-workers' responses to Questions 1a and 1b (mine workers were the only group that really contained enough responses to make a comparison valid), and compared them with that mine's safety record. The result of this comparison is shown in Figure A. There is a remarkably good relationship between the effectiveness of a mine's IRS (as measured by worker responses to Questions 1a and 1b) and its safety performance—the higher the score to the Q1a*Q1b combination, the lower the TMI frequency for the mine is likely to be.[10]

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9 SCORE: We assigned 0% to "strongly disagree". 33% to "somewhat disagree", 67% to "somewhat agree", and 100% to "strongly agree".

10 The least-squares linear-regression line shown in Figure A, is significant (as measured by the Student's t test) at the 1% level ($p = <0.01$)—in other words, such a line would be likely to occur by chance ***only*** one time out of a hundred.

FIGURE A: *The Relationship Between a Mine's Safety Performance and the Effectiveness of Its IRS (as measured by workers' responses to Questions 1a and 1b)*

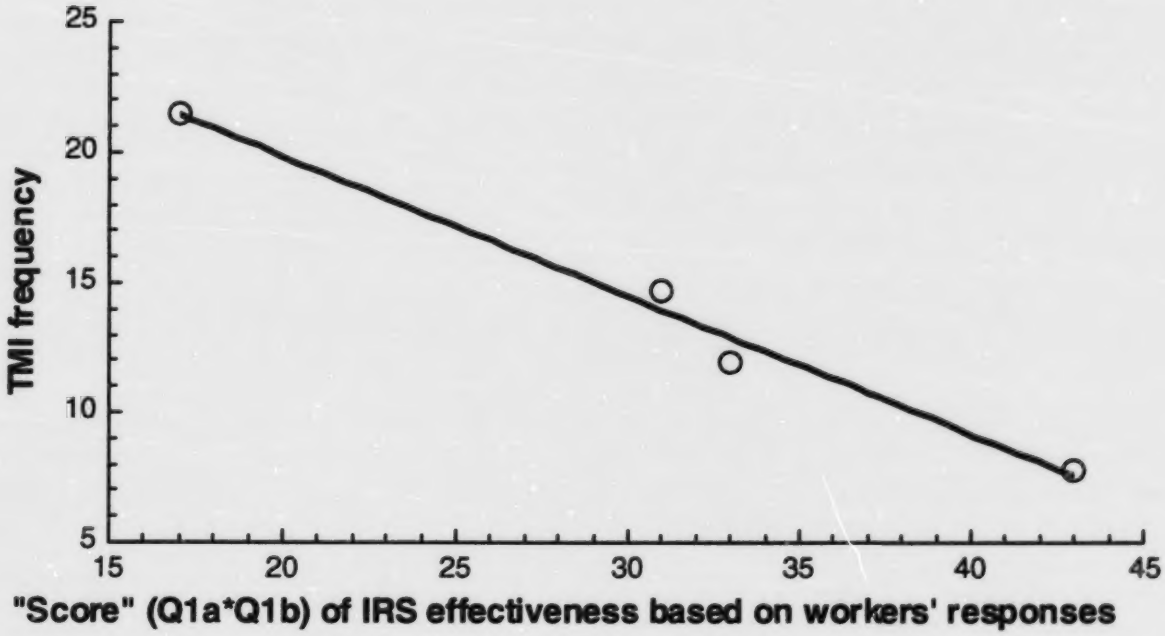
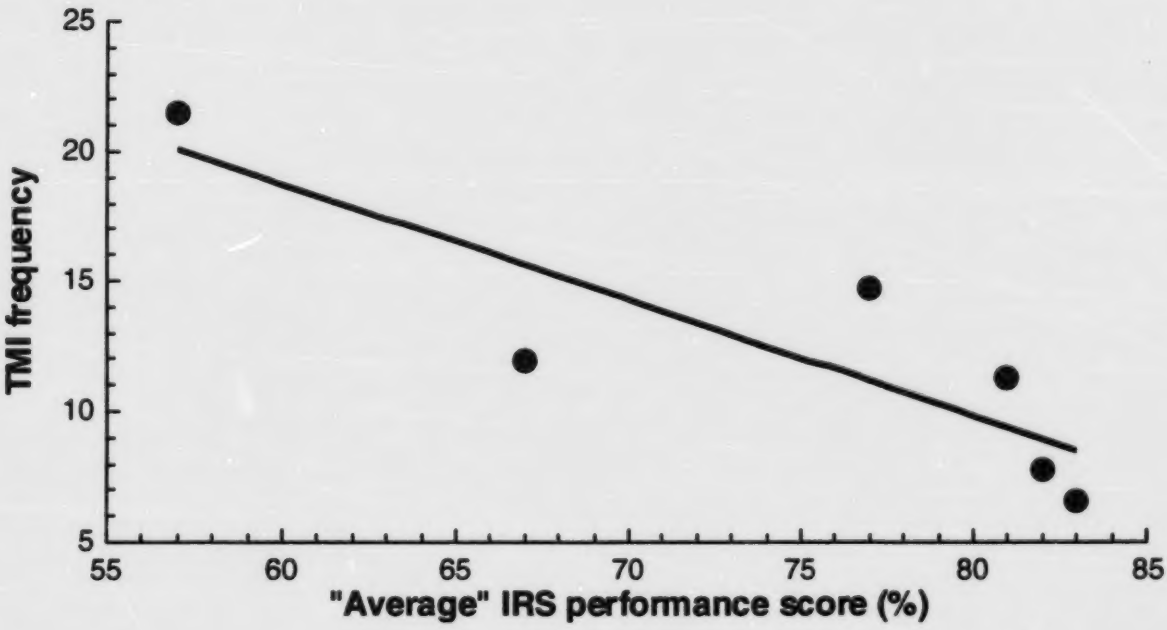


FIGURE B: *The Relationship Between a Mine's Safety Performance and Its Average IRS Performance Score*



IRS Performance Indicators

Many of the questions were designed to probe the flow of information and responsibility up and down, and within, the responsibility chain. To investigate relationships with safety statistics, we chose the clusters of questions dealing with indicators of IRS performance. These clusters dealt with the nine indicators of IRS performance shown below and involved all levels of the responsibility system.

Beliefs [34][11]	Responsibility [4]	Accountability [8]
H&S concerns & responses [16]	Initiatives & responses [26]	IRS issues & responses [45]
Demonstrating leadership [39]	Work planning [8]	Information flow [6]

To make the comparison with safety records, we arbitrarily took the average of the "scores" of all nine indicators (individual questions were scored in a similar way to those described in the Section above). The result, for the six mines, is shown in Figure B. There is good correlation between the scores for the nine indicators, taken as a whole, and the safety records of the six mines—the higher the score, the lower the TMI frequency.

ANALYSIS OF QUESTIONNAIRES

For analysis purposes we grouped the questions into a series of "clusters", each with the same theme—e.g., questions involving the planning of the work are grouped together in the "planning cluster". Much of the report is concerned with investigating such questions as: "Why did the mines with the best safety performance score high in their responses?" Which questions, or clusters of questions contributed the most to a high score, and which did not—and why? It was an exercise that enabled us to make suggestions as to how the audit tool may be improved.

We approached this task from two standpoints. The first looked at the responses in terms of such IRS "concepts" as leadership (at all levels in the organization), work planning, and information flow. The second looked at responses from the perspective of each level in the organization—for example: how did the supervisors as a group do? or the mine managers?. The first was conceptual, while the second was more structural.

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[11] The figures in brackets indicate the number of questions in each suite.

The exercise essentially consisted of an examination of the various clusters on a question by question basis. Such detailed work is virtually impossible to succinctly summarize except in the form of recommendations, and these form part of the final chapter of the report. Accordingly, we suggest that readers of this synopsis investigate the details presented in Chapters 4 and 5 to clarify, for themselves, the reasons for the report's recommendations.

IRS Performance Indicators

As a general observation, there did appear to be a relationship between the preponderance of questions directed to workers and the degree of correlation between IRS performance and the medical aid statistics. There may be several reasons for this. In part, the larger numbers of worker respondents helps. But the reason may have more to do with how abstractions have to filter down and be translated into concrete improvements in conditions and practices in order to reduce risk. It is workers who can see best if policies, systems, leadership activities and so on are being put into practice. Conversely, it might be said that the more senior people are usually quite aware of what the "correct" answers should be to "system oriented questions". The enthusiasm of senior people to "look good" on the survey may have influenced results, giving a more homogeneous response across mines regardless of OHS performance.

The Planning Cluster: There were only eight questions in this cluster. Of these, three were directed to workers and three to front-line supervisors (FLSs). Thus there was a strong emphasis on the views of the people closest to the work. This cluster of questions had a good correlation with OHS performance. The workplaces in which workers and supervisors were involved heavily in planning the work tended to be the mines where there were fewer accidents (as measured by medical aid cases).

The Information Cluster: There were only 6 questions in this cluster and only one of them was directed to workers. However, the answers to this cluster, taken as a whole, correlated reasonably with OHS performance. Workplaces where people doing the work get good OHS information quickly are going to be workplaces where people making daily, practical decisions about work and OHS will be making excellent decisions about risk reduction. It has always been said about the IRS that one of its most basic principles is openness about OHS. In law, this has been referred to as the "right to know", more accurately described as various "duties to tell" on the part of the employer and supervisors. In general, we can say that people are making better decisions

throughout the IRS if they have the right information about hazards and controls. Information is the "lubricant" for successful problem-solving in the system.

The "Beliefs" Cluster: There were 34 questions in this relatively large cluster and, taken as a whole, the answers gave a reasonable correlation with OHS performance. The questions were distributed among all workplace parties, with a slight emphasis on workers and supervisors, and covered the following topics:

1. whether a person believed he or she could go to the next level in the IRS without fear of a bad reaction;
2. whether a person believed in a fundamental conflict between OHS and production or profitability;
3. whether a person believed that OHS was a part of quality management;
4. whether a person believed that following procedures is in conflict with production;
5. whether a person viewed OHS goals as being beyond "mere regulatory compliance"; and
6. whether a person believed the role of the JHSC to be one of "internal auditor".

While there are problems reliably measuring beliefs, and while there are debates as to the relative importance of beliefs and behaviours, we assume here that good indicators of the effectiveness of the IRS will be the presence of certain fundamental ideas in the minds of individuals in the workplace. In general, we can say that there was usually good variation within the worker responses, variation that followed the OHS performance of the mine. Questions that required self-assessment by supervisors and managers usually resulted in relatively homogeneous (and positive, from the standpoint of actions by the respondents) responses across mines, thus contributing little to the correlation of the cluster with OHS performance.

The "H&S Concerns & Responses" Cluster: There were 16 questions in this cluster and they dealt with the way people interacted between levels in the organization with respect to handling OHS concerns and complaints. And six of these focussed on the interaction between the worker and the direct supervisor. Taken as a whole, the responses to this cluster showed only a fair correlation with OHS performance. There tended to be a fairly homogeneous and positive response on questions dealing with self-reporting by managers and, hence, there was no correlation with the answers to this sub-set of questions and OHS performance.

We expect the central core of the IRS to be a "filtering mechanism" so that many small issues can be dealt with quickly by workers and front-line supervisors. But issues involving greater resources or having cross-organizational impact will be the larger issues that need to move up the organization. Few reach the top. The many small issues will tend to be direct causes of accidents and exposures. The few large issues will tend to be the system errors that are the root causes of the direct causes.

The "Initiatives & Responses" Cluster: There were 26 questions in this cluster. Only three were directed to workers, and five to front-line supervisors. Middle managers were emphasized with seven questions directed to them. There was no real correlation between the answers, taken as a whole, and OHS performance.

We asked a lot of questions about people taking initiative on OHS in this cluster. The "concerns" cluster, above, was about *traditional* concerns, reports and complaints. That is, traditionally, people see problems—defects, contraventions, dangers—and they deal with the problem or bring it to someone else. But the quality approach tells us that we want people to go beyond the negative and the traditional. We want people to think of ways of improving the processes they are involved with.

The "Accountability" Cluster: There were eight questions aimed at all levels of the direct line of responsibility except the workers. Although one might have expected a strong correlation between OHS performance and the degree to which people in the IRS were formally held accountable for OHS activities, the answers to this cluster, either taken singly or as a whole, did not track OHS performance.

The "Demonstrating Leadership" Cluster: This cluster did not correlate with OHS performance. On the face of it, this runs counter to the accepted wisdom that OHS success depends on commitment from the top. Our view is that leadership at all levels is important, but it is up to the more senior people in particular to set the tone, establish the corporate culture and drive the IRS. There were 39 questions in this cluster, but only two of these were directed to workers.

The "IRS Issues & Responses" Cluster: This cluster did not show a correlation with OHS performance. This was the biggest cluster of questions—45 in total. Only two of those questions were directed to workers (i.e., 4% of the questions). This is likely the primary explanation for the poor correlation.

There were several sub-themes in this cluster:

- reporting up the responsibility chain regarding IRS performance;
- responding to such reports;
- the role of the JHSC and worker representative regarding the IRS;
- the role of the OHS professional regarding the IRS;
- the use of "IRS analysis"; and
- the existence of a "truncated" version of the IRS.

Given its size and its sub-themes, this cluster would be better broken out into separate clusters.

The "Responsibility" Cluster: This cluster consisted of only four questions and dealt with responsibility at the worker/front-line supervisor interface, and was disappointing in an ironic way. Who would have thought that the *responsibility* cluster concerning the Internal *Responsibility* System would show a lack of correlation with OHS performance? All we can say is that there were few questions involved in this cluster and so it had little scope and impact.

Analysis of the IRS at All Levels of the Organization

In analyzing the "structural" aspects of the IRS, we had two fundamental questions for each group in the IRS. First, does the group understand the IRS? Second, is the group committed to doing what's necessary under the IRS? Leadership is not something that just the most senior people should be doing. In health and safety we talk about leadership at all levels.

Corporate Level: Six questions were in the cluster asking about senior-executive understanding of the IRS, and seven in the cluster asking about Directors' understanding.[12] At this highest level of the IRS we did not find correlation between the answers given (either considered as a whole, or as individual answers) and OHS performance. So, a good score or a bad score doesn't tell us anything since neither are connected to OHS performance. We tended to get the same good answers regardless of whether the mine in question had a good or bad track record on accidents.

The corporate commitment (leadership) cluster—which contained 56 questions in total—consisted of questions for both executives and Directors, *and* questions about

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12 For two of the six mines, we were unable to include Directors in the survey.

executives and Directors asked of other members of the IRS. There was no significant correlation between responses to the cluster, taken as a whole, and OHS performance of the mine. Part of this lack of correlation *may* have been due to the fact that there was considerable homogeneity in the responses from the corporate respondents, irrespective of the mine they were responding about.

Mine Managers: The responses to questions regarding mine managers' understanding of the IRS (a cluster of eight questions) showed some correlation with OHS performance. However, the responses to questions regarding mine managers' commitment to the IRS (36 questions) showed no correlation with OHS performance. Part of the problem may that there was considerable homogeneity in the answers given by the mine managers, irrespective of the mine, and their questions formed nearly half of the questions that made up this cluster. The manager's position in the central core of the IRS is between the middle managers and the executives. There were six questions that asked middle managers about their interaction with the manager. And there were three questions asking senior executives about the manager's performance. The managers themselves had 16 questions that essentially asked them to assess their own performance. Only one question in this cluster was directed to workers and only one was directed to front-line supervisors.

Middle Managers: The middle-manager understanding cluster (seven questions in all) did not show correlation with OHS performance. There was, however, only one corroborative question and that was asked of front-line supervisors. There were 18 questions in the cluster asking about middle managers' commitment to the IRS. Half of the questions were asked directly of the middle managers. Seven questions were asked of the middle managers' immediate subordinates (the front-line supervisors), and mine managers were asked two questions about their immediate subordinates (i.e., the middle managers). Workers, the internal auditors, and the most senior people were not asked anything about the middle managers. The responses to this cluster, taken as a whole, did not correlate with OHS performance—again, probably, because there was a fair amount of homogeneity in the responses given by middle managers, irrespective of the mine.

Front-line Supervisors: There were six questions in the cluster dealing with front-line supervisors' understanding of the IRS, and four were asked of the supervisors themselves. The responses to the questions, taken as a whole, correlated with OHS performance. The cluster dealing with the "leadership" of front-line supervisors in the IRS comprised 21 questions, with eight questions being directed at the front-line

supervisors themselves and 10 to workers, the remainder were directed to the front-line supervisors' own supervisors or to the "internal auditors". The responses to the questions in this front-line-supervisor cluster, taken as a whole, also correlated with OHS performance.

Workers: There were eight questions that comprised the cluster of questions that dealt with the understanding workers had of the IRS. Four of these were questions asked of the workers themselves, and four asked other levels of the IRS for their assessment of the workers' understanding. There was a good correlation between workers' understanding of the IRS (as measured by this eight question cluster) and whether the mine was a good OHS performer. The cluster dealing with worker commitment and leadership (a small group of only four questions) were not correlated with OHS performance. There were too few of them. In fact, there was only one question aimed directly at workers.

JHSC Members: The cluster investigating JHSC members' understanding of the IRS comprised 12 questions, all but two of which were asked of Committee co-chairs and certified members themselves. There was moderate correlation between the answers from this cluster, considered as a whole, and OHS performance. There are 19 questions in the cluster dealing with JHSC commitment in the IRS, 11 of which were asked of the co-chairs and/or certified members themselves. There was no significant correlation between the responses to these questions, taken as a whole, and OHS performance.

OHS Co-ordinator: Of the nine questions investigating the OHS co-ordinators' understanding of the IRS, eight were asked of the OHS co-ordinators themselves. There was no correlation between responses and OHS performance. Perhaps OHS co-ordinators have a pretty good idea of what the right answers should be, regardless of the mine they work for. OHS co-ordinators are few in number and they do not normally have direct authority over others regarding OHS. Their understanding of the IRS could only have an impact on a mine's OHS performance if they have influence on the mine manager's and the supervisory personnel's understanding of the IRS. The cluster dealing with the OHS co-ordinator's commitment to the IRS consisted of seven questions; only two were corroborative, and none was aimed at workers or front-line supervisors. There was no correlation between responses to the questions, taken as a whole, and OHS performance.

MOL Inspectors: There was no correlation between the inspectors' questions and OHS performance of the mines they were personally involved with. And, realistically, we would not expect there to be a correlation. The inspector's commitment should be consistent across workplaces, regardless of the OHS performance of the site.

CONCLUSIONS AND RECOMMENDATIONS

The data clearly demonstrate that answers to the questionnaires can be related to a mine's safety performance. The Question 1A and 1B combination, particularly as answered by mine workers, shows promise as an easily administered and interpreted tool that can give a quick assessment of the IRS at a particular mine.

In addition, if it is accepted that the questionnaires do provide a measure of how the IRS functions in the mine (and we have no reason to suspect that they do not), then one can conclude from the correlations that better performance in the IRS will lead to a better safety record. If the IRS is working well, the organization has fewer accidents, as measured by medical aids (and to a lesser degree, as measured by lost time).

Further Modifications of the Audit Tool

The time constraints for this project do not allow us the opportunity for another iteration of testing the audit tool. We do, however, suggest that this be done. In our question by question analysis of the trial audit questionnaires, we gained an impression of which questions appeared to work, and those that did not. We believe that the following types of modifications would give a better overall correlation with OHS performance, as well as improve the correlation of sub-groups and even individual questions.

- Elimination of questions that tended to cause confusion
- Decrease in the number of questions directed to senior management
- Increase in questions to non-senior management about the beliefs and actions of senior management
- Elimination of questions that had little contribution to the correlation with OHS performance
- Change in wording of some questions so as to be more specific or more action oriented
- Re-classification of a small number of questions in the thematic clusters of questions used to focus in on the causes of IRS performance
- A change in the number and nature of the thematic clusters of questions

The IRS Description

The description of the IRS is useful in and of itself. A single, authoritative description will reduce misunderstandings about the IRS. Too often in the past one got the sense that people were discussing the IRS while assuming that there was a shared understanding. We are better able to strengthen the IRS when there is a consistency of understanding. To be a little more forceful about it, the description of the IRS, reached as it was with the assistance of the IRS Steering Committee, is perhaps the most important outcome of this project.

The IRS Analysis

There is an outcome of this project that is conceptually part way between the IRS description and the IRS audit tool. That is, the IRS model can be used to analyze OHS situations, problems and opportunities in new ways. Most health and safety problems can be analyzed in terms of the root problems with the "people factors" in the organization. We call this "IRS analysis".

- IRS analysis puts the people of the organization front and centre in the analysis.
- Everyone should be engaged in IRS analysis to some degree. The health of the IRS itself should be a major concern of mid to senior management. The manager should be asking him or herself: "What authority or resources did they lack that they felt that they could not solve this problem?" and "If there was a lack of information, authority or resources, why was the problem not passed on up to a higher level of the organization?"
- The OHS professional and the JHSC members would do a much better job of handling issues if they became accustomed to thinking in IRS terms. IRS analysis would take us beyond the question "is this work safe?", to "why wasn't this hazard dealt with by the people responsible within the day to day routine?"
- Similarly, while we made no direct observations, it follows that a MOL inspector has greater success in obtaining compliance if he or she goes beyond compliance into the IRS. It is not that people would be prosecuted or be given orders expressly for "failures within the IRS", but rather IRS analysis would locate individuals needing external stimulation or stimulation from the higher levels of the IRS.

The IRS Audit

We have shown very strong support for the principle that if the IRS is working well an organization will have fewer accidents. The IRS audit is a tool for measuring how well the IRS is working. But the IRS audit does more than that. It also enables the

user to find out *why* the IRS is working the way it is, and thus provides some guidance as to what actions might be taken to improve the IRS.

It should be noted that the predictive value of the audit tool works even if there is no actual use of the tool. All one needs to do is identify the organizations with poor medical aid and lost time statistics and you have identified the organizations with weak IRS performance. There is a temptation to say that this is merely stating the obvious, but it must be recalled that this study showed the relationship between the "end of stream" statistics and IRS performance. The statistics predict which organizations need the more intense analysis based on the full set of questions—the analysis focussing on why the IRS is performing poorly.

It is vital that users of the audit tool do not rest with the final "scores", but use the tool to probe deep into the organization to see why the numbers turned out the way they did. This analysis is the most important use of the audit tool, particularly for the people within the workplace.

The main report makes a whole series of observations and comments regarding the administration of the audit tool. The following topics are covered:

- Proper modification of the audit tool;
- The need for a single official custodian of the audit tool;
- Tinkering with analysis algorithms contained in an Excel spreadsheet, the electronic version of which formed part of the report;
- Distribution of questions or model answers;
- How to refresh the questions;
- Time taken to administer the Audit;
- Audit Frequency;
- Using the audit results;
- Evidence for answers;
- Fear of a Poor "Score";
- Sampling Strategy;
- The cost factor
- Ensuring that groups of respondents are matched;
- Ensuring that all shifts are sampled;
- Education and training for consistency of use;

- Internal auditors;
- External auditors; and
- Following-up on the Audits.

This list is not intended to be exhaustive, but rather serves to illustrate many of the considerations that will need to be addressed before an audit tool is put into general use.

Postscript

The IRS Steering Committee reviewed the report in its "draft-final" form and discussed its contents and recommendations with us at a meeting on 18 August 2000. Subsequent to that meeting, and based on our recommendations on how the questionnaires might be improved, the committee asked us to make revisions to the questionnaires administered during the trial audit of the six mines. This was done, and revised questionnaires are appended to the main report. However, the Committee did *not* adopt all the recommendations we made for questionnaire change. Further, while we feel that the limited changes should lead to questionnaires that produce responses giving a better overall correlation with OHS performance, there is no way (short of conducting additional mine audits) of verifying this. This is because of the new questions that have been added.

The report spent considerable effort in analyzing, on a question by question basis, the questionnaires. This analysis showed that there were problems in both the way some of the trial-audit questions were asked, and how they were grouped and weighted to analyze IRS functions. We feel that a more focussed analysis of the considerable wealth of data collected in the trial audit, than was permitted by the time and resources available to us in this project, would considerably improve the audit tool as it now stands. Thus we caution that, while the Excel spreadsheet (which, in its electronic form, is part of this report) was useful in helping the analyses reported here, there are problems in the underlying algorithms. Accordingly, if the spreadsheet is used at all in its present form, its results need to be treated with due circumspection.

1. INTRODUCTION

This is the third and final report of a study on the Internal Responsibility System (IRS) in Ontario underground mines. Our main aim has been to develop an audit tool through which the health of the Internal Responsibility System in a mine can be assessed. This report describes the validated audit tool, as a result of its being tested in a trial audit on six mines, and contains suggestions for further improvement of the tool and for its administration by others.

The study has been conducted with the oversight of the IRS Steering Committee consisting of government, industry and labour representatives. The two Interim Reports submitted to the Steering Committee detailed our initial steps, including the development of a description of the IRS and the application of a trial audit tool to two mines selected by the Steering Committee.[1] The final version of the IRS description, as accepted by the Steering Committee, is presented in Chapter Two.

Some changes were made in the audit questions following the pilot audit. A complete set of audit questionnaires administered in the trial audit is presented in Appendix 1. The audit tool was used in six mines selected by the Steering Committees—four hardrock mines (two gold mines and two base-metal mines) and two soft-rock mines:

Falconbridge Ltd. Kidd Creek Mine Timmins	Inco Ltd. Creighton Mine Copper Cliff	Georgia Pacific Corp. Caledonia Mine Caledonia
Sifto Canada Inc. Goderich Mine Goderich	Placer Dome Canada Ltd. Musselwhite Mine Thunder Bay	Teck-Corona Operating Corp. David Bell Mine Marathon

These mines were not a random sample of Ontario underground mines but were chosen so as to provide a broad range of both mine types and health and safety performance. In addition, the Steering Committee selected two mining-contractor operations to which the audit tool was to be administered, with the primary purpose of investigating the IRS interface between mine and contractor employees. The contractor operations chosen were

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1 The two reports were: I.M. Plummer, P.W. Strahlendorf, and M.G. Holliday, *THE INTERNAL RESPONSIBILITY SYSTEM IN ONTARIO MINES—Interim Report #1: Description of the IRS* (delivered to the IRS Steering Committee, 30 November 1999); and, I.M. Plummer, P.W. Strahlendorf, and M.G. Holliday, *THE INTERNAL RESPONSIBILITY SYSTEM IN ONTARIO MINES—Interim Report #2: The Pilot Audit* (delivered to the IRS Steering Committee, 7 February 2000).

BLM Mining Services Inc.'s operation at Creighton Mine and Manroc Developments Inc.'s operation at David Bell Mine. The visits took place from the end of February to the beginning of April 2000.

We have detailed the steps taken to validate the audit instrument in Chapter 3. It was critical to determine whether or not mines which "scored" well on the IRS audit were the mines that also had good OHS performance. The latter was measured by total medical aid cases and by lost time data. The audit tool was, in general terms, validated—the mines with lowest accident statistics tended to have the highest IRS "scores". It must be kept in mind, however, that some questions contributed to the correlation between IRS score and OHS performance, and some did not. We have made suggestions for improving the questions so that a higher proportion of the questions will contribute to the correlation.

Chapters 4 and 5 contain our analysis of the audit questions. We were aiming at three things in these two chapters:

- We wanted to provide further insight into why some questions were included in the audit. That is, we wanted to provide greater understanding of the connection between the IRS model in Chapter 2 and specific questions;
- We went beyond the overall numbers into the suitability of sub-groupings of questions. This will assist prospective users of the audit tool. The most productive use of the audit tool is to dig deep into the organization to find out why the mine scored as it did on the audit, so that improvements to the IRS can be made.
- Our analysis also helped uncover specific questions which could be dropped, reworded or replaced. On occasion it was obvious that certain new questions needed to be asked. Our analysis was the basis for many of the recommendations in Chapter 6.

To be more specific, in Chapter 4 we analyzed the audit results in terms of concepts such as "Initiative", "Planning" and "Accountability". That is, the questions were grouped into "clusters" that would illuminate whether certain concepts vital to the successful functioning of the IRS were alive and well. Some of these "performance factors" contributed to correlation with OHS performance better than others. A number of suggestions for changes were made.

In Chapter 5, we looked at the data in a different way. The questions were regrouped along structural lines, rather than conceptually. That is, how did supervisors as a group do? Did mine managers understand the IRS and did they exhibit leadership in

making it work? The prospective user thus can see how the root problems in the IRS can lead to very specific remedies aimed at narrow groups within the organization.

Our conclusions are briefly summarized in Chapter 6. We summarize the ways in which the audit questions can be improved. We describe the benefits of having clarified a single, simple description of the IRS that can be used consistently by many interested parties. Further, we describe what we call "IRS Analysis", which is a method of going beyond the superficial OHS problem to determine the weaknesses in the IRS—the "people problems". Finally, we offer a series of suggestions as to how the IRS audit tool can be administered effectively. There are a number of different ways in which different entities can use the IRS audit tool. It is our hope that serious consideration will be given to treating the audit instrument as a "work in progress"; efforts must be made to continually improve it. Second, we would hope that users do not succumb to a fixation on "scores" and "passing the audit". As we discuss in the report, the primary reason for doing an audit should be to engage in an analysis to find out *why* the numbers turned out as they did, so that precise steps can be made to improve the functioning of the IRS.

We now know that a healthy, well-performing IRS can lead to fewer accidents in the workplace. We now have a method of measuring the performance of the IRS and of analyzing the strengths and weaknesses of a workplace-specific IRS. The workplace parties will have many opportunities to build on these insights.

2. THE INTERNAL RESPONSIBILITY SYSTEM (IRS)

This description of the IRS was initially presented in *Interim Report #2* and formally recognized by the Steering Committee at their meeting on 10 February 2000. As a result of the discussions at that meeting, some minor modifications to the description were suggested. The changes were made and we sent the revised version to the Steering Committee on 16 February 2000.

2.1 DESCRIPTION

The IRS is a system, within an organization, where everyone has *direct* responsibility for health and safety as an essential part of his or her job. It does not matter who or where the person is in the organization, they achieve health and safety in a way that suits the kind of work they do. Each person takes initiative on health and safety issues and works to solve problems and make improvements on an on-going basis. They do this both singly and co-operatively with others. It is one of the *personal* responsibilities of a company President to ensure that the entire system of direct responsibility for health and safety within a company is established, promoted and improved over time. Successful implementation of the IRS should result in progressively longer intervals between accidents or work-related illnesses.

In addition to those with *direct* responsibility, a number of people and agencies have *contributive* responsibility for health and safety. Within any organization, the Joint Health and Safety Committee (JHSC) has a key contributive part:

- in health and safety in general, and
- in making the IRS work well.

The organization's health and safety staff[2] also play a *contributive* role.

Assisting the IRS from *outside* the organization are the Safe Workplace Associations (e.g. MASHA), the Ministry of Labour (MOL), Unions[3] and others. The

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2 These include the Health and Safety Coordinator; Hygienist; and Nurse, etc.

TABLE 2-1: *Participants with Direct Responsibility in the IRS and Those with a Contributive Role*

PARTICIPANTS IN INTERNAL RESPONSIBILITY SYSTEM	
Direct Participants	**Contributive Participants**
Members of Board of Directors	INTERNAL
Executives	Joint Health and Safety Committee
Managers	Health and Safety Staff[4]
Supervisors	Engineers[4]
Workers	Other Staff[4]
	Union(s)[5]
	EXTERNAL
	Union(s)[5]
	Safe Workplace Associations
	Workers' Centre
	Ministry of Labour
	WSIB
	Suppliers

3 The members of the Union, and their representatives who are employees of the employer are "internal" to the employer's organization. The Union will also have health and safety resources located "external" to the employer's organization.

4 Although these parties are *contributive* to the IRS in the workplace in general, they are also *direct* parties to the IRS in their own workplaces.

5 See Footnote 3

MOL may exercise direct authority to resolve health and safety problems in the workplace, principally through its inspectors issuing orders. Listed in Table 2-1 are the direct and contributive components.

While there is an IRS present in all workplaces, it can always be improved. The challenge is for everyone in the workplace to continually improve the way the IRS works.

2.2 KEYS TO A SUCCESSFUL IRS

1. Everyone must have a sincere wish to prevent accidents and illnesses;
2. Everyone must accept that accidents and illnesses have causes that can be eliminated or greatly reduced;
3. Everyone must accept that risk can be continually reduced, so that the time between accidents and illnesses get longer and longer;
4. Everyone must accept that health and safety is an essential part of doing his or her work. (Health and safety is not an extra, it is part of doing the job);
5. Every person must have a clear understanding of what he/she is responsible for; what he/she can do to change matters; and when things must be done;
6. Every person must be regularly asked to explain what they have done to ensure health and safety on the job and in the workplace;
7. Everyone must have a clear understanding of their own skill, ability and limitations, and should have the capacity to carry out their responsibilities;
8. Everyone must attempt to avoid conflict when trying to reduce risk;
9. As an individual, each person must go beyond just complying with health and safety rules and standards, and strive to improve work processes to reduce risk;
10. When an individual cannot reduce risk by him/herself, then they must cooperate with others to go beyond just complying with health and safety rules and standards, and strive to improve work processes to reduce risk;
11. Everyone must understand the IRS process, believe in it, and take steps to make it effective at all levels in the organization; and
12. No one should be fearful of reprisals when using IRS processes.

2.3 PROCESSES FOR A SUCCESSFUL INTERNAL RESPONSIBILITY SYSTEM

2.3.1 The Main Processes

- Leadership at upper management levels—to inspire and motivate others to fully take part in IRS;
- Leadership at all levels—by continually trying to improve the work processes to reduce risk;
- Appropriate and clear delegation of responsibility and authority for all health and safety matters;[6]
- Clear accountability for all delegated responsibility and authority regarding health and safety matters;[7]
- Open and honest communication between and at all levels in the organization;
- A free flow of relevant and factual health and safety information to all levels in the organization;
- Take reasonable care by considering the effects of what is being done, and working to improve processes;
- Recognition that the IRS is a *dynamic* system that helps the workplace parties to recognize and solve problems, and reduce risk;
- Recognition that the IRS is a "system", and that its many parts must work together to be successful. (Like a mechanical system, a broken "part", or a "part" that does not fit or work correctly, can cripple the IRS.);
- Problem solving by individuals—identification and resolution of defects, anomalies, contraventions, hazards and risks;
- Creative and continual improvement of work processes by individuals. (This means that individuals do not simply follow the rules, but add value to the workplace by finding safer and healthier ways of doing the work, and spreading the word);
- Reporting to the next level of supervision when the individual cannot resolve the issue in a satisfactory way. When necessary, this should go all the way up to local or executive management; and

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6 In this context: "delegation" means the entrusting of authority to a lower level in an organization; "responsibility" means an obligation to do, or not do, something; and "authority" means the power to take action, or make decisions.

7 In this context, "accountability" means the requirement to explain one's actions or decisions.

- Co-operative problem solving between the individual and the supervisor or manager. This can also include the co-operation of the contributive groups, such as the JHSC, or the health and safety staff.

2.3.2 The "Back-up" Processes

- The ability for the individual worker to take a problem to a worker representative[8] or the committee, if the IRS process is failing;
- The right of the individual worker to refuse unsafe work. This might be due to a problem the worker cannot correct, or when the IRS process is failing;
- Active examination of the IRS in action by the JHSC and others, to detect any failures in the IRS, and make recommendations for correction; and
- In general, concerns should be dealt with first by the people with *direct* responsibility, (that is: worker, supervisor, manager, and so on). Where a concern is not an immediate danger, the worker may need to allow time for supervision to resolve the issue. Where the "direct" responsibility processes stall or fail, then the internal "back-up" processes should be applied.

  Taking an issue to the MOL should normally occur after the parties internal to the workplace try to resolve the concern.

2.4 *DIRECT* RESPONSIBILITY

2.4.1 Members of the Board of Directors

HEALTH AND SAFETY MISSION

- To provide organizational direction that will ensure that safe and healthy work is carried out.

ROLES AND RESPONSIBILITIES

- Set the broad vision for health and safety performance;
- Ensure that the executives are capable of establishing and maintaining the IRS and the health and safety management system, and are motivated to do so;
- Require evidence from the executives that the IRS and health and safety systems are functioning well;

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8 This could be a Health & Safety Representative (as defined under s. 8 of the OHSA), a certified member or other member of the committee, or a safety representative selected by some other process.

- Respond promptly and appropriately to reports from the executives, and others, about the IRS and health and safety systems; and
- Hold the executives accountable for their health and safety performance.

2.4.2 Executives[9] (particularly the President or Senior Operating Officer)

HEALTH AND SAFETY MISSION

- To provide the leadership, resources and environment that will ensure that everyone can do safe and healthy work.

ROLES AND RESPONSIBILITIES

- Be visibly committed to making the IRS work, and inspiring others to make it work;
- Establish that the IRS is working by ensuring regular audits, and receiving and acting on reports;
- Be the role model, and set the tone for everyone else in the organization;
- Be knowledgeable about the health and safety performance of, and events in, the organization;
- Determine the policy for safe and healthy work, and ensure that it is known throughout the organization;
- Ensure that programs and training are in place to make the policy work;
- Delegate authority and responsibility appropriately, particularly with regard to health and safety matters;
- Hold people accountable for the authority and responsibility delegated to them;
- Ensure that suitable management structures are in place;
- Ensure that the workplaces are suitably staffed, at all levels, to meet the health and safety objectives;
- Provide resources so that supervision and workers can carry out safe and healthy work;

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9 This includes Vice-Presidents and others in the Executive Management who have direct responsibility for actions in the workplaces of the organization.

- Ensure that adequate and suitable planning and engineering is done to provide safe and healthy workplaces;
- Ensure that adequate and suitable planning and engineering is done to provide the safe use of the resources;
- Provide for flexibility in the organization, so that it can change as required by the situation;
- Consider problems that affect the whole organization;
- Respond appropriately to health and safety reports from managers and others (particularly the JHSC)
- Take appropriate problems to the Directors; and
- Ensure there is a non-threatening environment when exercising rights pursuant to the IRS.

2.4.3 Managers[10]

HEALTH AND SAFETY MISSION

- To know and understand the health and safety mission statement of the President, and to implement it;
- To find ways of improving health and safety in all areas under his/her jurisdiction.

ROLES AND RESPONSIBILITIES

- Be visibly committed to making the IRS work, and inspiring others to make it work to ensure that safe and healthy work can be successfully carried out;
- Determine the resources necessary to achieve the health and safety mission statement, and to communicate the requirements to the President;
- In consultion with the JHSC identify priorities and resources required for health and safety improvements;
- Provide, use and manage the given resources to ensure a safe and healthy workplace;
- Be knowledgeable about the health and safety performance of, and events in, the organization;
- Be aware of how this performance compares with that of similar organizations;

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10 This includes all "management positions" at the mine site above the level of the front-line supervisor. Thus, for example, it includes Captains, Superintendents, and the Mine Manager.

- Ensure the workforce (workers and supervisors) is trained to safely complete the work;
- Ensure the workforce (workers and supervisors) is informed about, and trained to deal with hazards in the workplace;
- Ensure that the training is current, and that it is regularly reviewed and refreshed;
- Ensure that the members of the workforce (both direct and contributive) understand their duties and responsibilities in making the IRS work properly;
- Be aware of, follow and demand compliance with all applicable legislation;
- Ensure that there is an effective mechanism for co-operative problem solving amongst workers and supervisors;
- Show commitment to the co-operative problem-solving and decision-making process;
- Use initiative in the improvement of all workplace processes, in order to reduce or eliminate risk;
- Encourage supervisors and workers to report unresolved health and safety problems;
- Respond appropriately to reports of health and safety problems, and to JHSC recommendations;
- Ensure that an effective mechanism is developed and implemented for auditing the operation of the IRS in the workplace (such as the JHSC), and act on the advice that comes forward from the audit;
- Be a role model by being concerned for the health and safety of the workers in all circumstances;
- Ensure that there is an effective mechanism for monitoring and modifying work practices and workplace conditions;
- Set standards for the performance of safe and healthy work;
- Set up job procedures to ensure that workers can carry out safe and healthy work;
- Ensure that periodic audits of job procedures are made, to make sure they are up-to-date and being used;
- Delegate authority and responsibility appropriately, particularly with regard to health and safety matters;
- Hold people accountable for the authority and responsibility delegated to them;
- Assign duties that match the authority, responsibility and accountability of the worker and supervisor;

- Keep abreast of industry 'best practices' and apply them where appropriate;
- Analyze and take action regarding serious incidents[11] and other problems that affect the whole operation;
- Take unresolved health and safety problems to executive management; and
- Ensure there is a non-threatening environment when exercising rights pursuant to the IRS.

11 "Serious Incident" means an incident that causes, or has the potential to cause, fatalities or debilitating injuries for life.

2.4.4 Supervisors[12]

HEALTH AND SAFETY MISSION

- To manage the adequate resources, so that the workers can perform their duties in an efficient and safe manner; and
- To find ways of improving health and safety in all areas under his/her jurisdiction.

ROLES AND RESPONSIBILITIES

- Plan work assignments to enable workers to produce safely;
- Ensure that workers understand the authorities, duties and responsibilities of all parties in making the IRS work properly and achieving safe and healthy work;
- Ensure that workers receive appropriate training and direction to understand their direct authorities, duties and responsibilities in making the IRS work properly and achieving safe and healthy work;
- Ensure that the workers understand the scope of their authority for health and safety, and for taking initiatives to reduce risk in the workplace;
- Ensure that the workers have received the appropriate training to carry out safe and healthy work, and that the training has been 'refreshed' as appropriate;
- Act as a facilitator for the workers;
- Encourage workers to report health and safety problems;
- Respond quickly and appropriately to worker concerns, and cooperate in their correction, or if beyond the authority or ability of the supervisor, take the matter to a higher level;
- Use initiative in the improvement of all workplace processes, in order to reduce or eliminate risk;
- Be aware of the applicable legislation and company procedures;
- Ensure that the workers are able to work according to the established work procedures and legislation, and hold them accountable for their actions and decisions;
- Set an example by being consistently safety conscious, and insisting on the safe performance of work;

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12 This is intended to cover primarily the "front-line supervisor", although some of the roles and responsibilities might apply to the second-line supervisors who have been included under the heading of "Managers".

- Supervise, advise and coach the workers as required;
- Use appropriate methods to convey safety and health information, and the "safe work" message (safety talks, tailgate conferences, safety demonstrations etc.);
- Observe the actual work in progress and provide positive input to the workers;
- Ensure that the workers are aware of potential hazards, and have dealt with, or are dealing with the actual hazards in the workplace;
- Manage the adequate resources;
- Involve workers in work planning, decision making and problem solving;
- Advise other workers of known unsafe conditions or work practices;
- If hazards cannot be dealt with due to lack of authority or resources, then protect the area and ask senior supervision for advice or additional resources
- Follow-up on unresolved issues referred to senior supervision; and
- Ensure there is a non-threatening environment when exercising rights pursuant to the IRS.

2.4.5 Workers

HEALTH AND SAFETY MISSION

- To perform assigned duties safely, according to established procedures and applicable legislation;
- To advise other workers and supervisor of hazards in the workplace; and
- To find ways of improving health and safety in the workplace.

ROLES AND RESPONSIBILITIES

- Perform assigned duties;
- Use safety equipment and devices as required;
- Correct or report unsafe conditions, serious incidents and other events;
- Participate in joint decision-making and problem solving;
- Work in a way that will not endanger him/herself, or others;
- Advise other workers of known unsafe conditions or work practices;
- Be aware of and follow all applicable legislation and safe work procedures; and

- Use initiative in the improvement of all workplace processes, in order to reduce or eliminate risk.

In general, concerns should be dealt with first by the people with *direct* responsibility, (that is: worker, supervisor, manager, and so on). Where a concern is not an immediate danger, the worker may need to allow time for supervision to resolve the issue. Where the "direct" responsibility processes stall or fail, then the internal "back-up" processes should be applied.

Taking an issue to the MOL should normally occur after the parties internal to the workplace try to resolve the concern.

2.5 *CONTRIBUTIVE* RESPONSIBILITY

2.5.1 Joint Health & Safety Committee, or Health & Safety Representative[13]

HEALTH AND SAFETY MISSION

- To take a joint approach to the improvement of the IRS in the workplace, and to the reduction of health and safety risks to the workers; and
- To act as a resource to workers, supervisors and management.

[This is in addition to carrying out the committee's or representative's mandate under the Occupational Health and Safety Act.]

ROLES AND RESPONSIBILITIES

- Be an advocate for the IRS and its continual improvement;
- Monitor the functioning of the IRS and make recommendations for its improvement;
- Inspect the workplace for the purpose of ensuring that workers and supervisors are reducing risks on a continuous basis;
- Investigate serious incidents and other events with a view to identifying and recommending elimination of fundamental causes of losses;
- Intercede to resolve a worker's concern where the IRS fails;
- Assist in the development of safe and healthy working procedures;

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13 This means the Health and Safety Representative under Section 8 of the Occupational Health and Safety Act.

- Monitor the elements of the health and safety system (policies and programs) and to suggest ways of improving them;
- Contribute to the health and safety assessment of new facilities, equipment, material and processes;
- Determine what failures in the IRS caused work refusals to occur;
- Facilitate discussion among all members of the organization, particularly with respect to system-wide problems and opportunities;
- Provide a means by which insights and concerns of workers can be communicated to senior management;
- Act as another channel of communication between workplace parties;
- Act as a liaison for the MOL so that weaknesses in the IRS, and continuing health and safety concerns, can be brought to the attention of the inspector;
- Check that mechanisms are in place to monitor the performance of work; and
- Check that, when recommendations are made to change work procedures, the changes are made and maintained.

In general, concerns should be dealt with first by the people with *direct* responsibility, (that is: worker, supervisor, manager, and so on). Where a concern is not an immediate danger, the worker may need to allow time for supervision to resolve the issue. Where the "direct" responsibility processes stall or fail, then the internal "back-up" processes should be applied.

Taking an issue to the MOL should normally occur after the parties internal to the workplace try to resolve the concern.

2.5.2 Health and Safety Staff

HEALTH AND SAFETY MISSION

- To be a resource for all of the workplace parties with direct and indirect responsibility; and
- To be advocates for a well functioning IRS.

ROLES AND RESPONSIBILITIES

- Monitor the functioning of the IRS and make recommendations for its improvement;

- Educate all levels of the organization about IRS, and to actively promote it;
- Audit, or arrange for the audit of, the elements of the health and safety system, and to suggest ways of improving them;
- Regularly audit and inspect the operation for compliance with the Act, regulations and company procedures;
- Audit the management functions from a health and safety standpoint, and report their findings to senior management;
- Report to management on the safety and health status of the operation;
- Advise workers, supervisors and managers on technical safety and health matters;
- Advise the JHSC on technical safety and health matters;
- Advise trainers on the safety and health content of training courses; and
- Liaise with other operations, MASHA and similar resources to obtain up-to-date information on safety and health issues for the operation and the JHSC.

2.5.3 Unions

HEALTH AND SAFETY MISSION

- To ensure that the workers' health and safety interests are served.

ROLES AND RESPONSIBILITIES

- Appoint appropriate worker representatives, such as worker members to the JHSC;
- Monitor the activities of the JHSC, and to see that it is serving the health and safety interests of the workers;
- Promote change in the operation of the JHSC when the best health and safety interests of the workers are not addressed;
- Be an advocate to management, government and others for a strong and flourishing IRS;
- Judge whether the IRS is strong and flourishing, and if not take steps to promote change;
- Influence the workers to fully play their direct role in the IRS; and
- Consider the health and safety aspects of reports and notifications given to the Union, and where appropriate to take up the matter with the owner or Employer.

In general, concerns should be dealt with first by the people with *direct* responsibility, (that is: worker, supervisor, manager, and so on). Where a concern is not an immediate danger, the worker may need to allow time for supervision to resolve the issue. Where the "direct" responsibility processes stall or fail, then the internal "back-up" processes should be applied.

Taking an issue to the MOL should normally occur after the parties internal to the workplace try to resolve the concern.

2.5.4 Mines and Aggregates Safety and Health Association

HEALTH AND SAFETY MISSION

- To provide advice, information and audit services to individual mines, and to the mining industry.

ROLES AND RESPONSIBILITIES

- Promote the IRS in all of its prevention activities;
- Supply information to the industry and individual mines on their collective and individual health and safety performances;
- Provide or access training courses for workers, supervisors and managers;
- Provide health and safety audit services to Ontario mines;
- Access, collect, analyze and distribute mining health and safety information;
- Facilitate industry-wide collective action on health and safety issues; and
- Conduct or sponsor research on mining health and safety topics.

2.5.5 Ministry of Labour Mining Program

HEALTH AND SAFETY MISSION

- To advance safe … workplace practices that are essential to the … well-being of the people of Ontario.[14]

ROLES AND RESPONSIBILITIES RE IRS

- Focus on setting, communicating and enforcing legal standards;

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14 Extracted from the Ministry of Labour's Mission Statement [*Policy and Procedures Reference Manual.* Toronto, Ont.: Operations Division, Ministry of Labour (15 January 1997)].

- Promote the IRS;
- Promote workplace self-reliance;
- Review the functioning of the IRS in general, and give feedback to the workplace parties;
- Monitor the effectiveness of the IRS during:

  Inspections;
  Investigations; and
  Dispute resolution;

  and give feedback to the workplace parties;
- When the IRS is judged to be failing, recommend to the workplace parties that they seek help from such sources as the SWAs, (MASHA), Workers' Centre, etc.;
- Detect industry-wide and sector issues and trends, and communicate them to the employers and JHSCs;
- Administer and enforce the legislation [issuing compliance orders is a *direct* action rather than a contributive action]; and
- Train the inspectors in their role in the IRS.

2.5.6 Workplace Safety And Insurance Board

HEALTH AND SAFETY MISSION

- To create safe and healthy workplaces, and provide a comprehensive and viable support and insurance system for injured workers and employers.

ROLES AND RESPONSIBILITIES RE IRS

- Promote the IRS in all of its prevention activities
- Motivate and support workplaces in becoming self-reliant in health and safety, in order to support the prevention of accidents and illnesses;
- Identify and communicate 'best practices' in injury and illness prevention;
- Advise workers and employers in accident prevention;
- Support research that will increase practical problem solving and informed decision-making in prevention of injury and illness;

- Operate incentive and penalty programs to encourage employers to achieve good performance regarding injury and illness;
- Gather and communicate data regarding the prevalence of accidents and illnesses;
- Develop and communicate prevention programs; and
- Encourage the promotion of the IRS by the SWAs, Clinics and Workers' Centre under its jurisdiction.

2.6 QUESTIONNAIRES AND AUDIT APPROACH

Given the model of the IRS described in the sections above and building on experience gained during the pilot audit, we modified the questionnaires administered during that audit. We used the same number of different questionnaires as we had used in the pilot audit. There were 10 different questionnaires—for six levels of direct responsibility and for four levels of contributive responsibility:

Direct Responsibility	Contributive Responsibility
Company Directors	Co-chairs of the JHSC
Senior Executive Officers	Certified Members
Mine Managers	OHS Specialist
Senior Supervisors	Ministry Inspectors
Front-line Supervisors	
Workers	

The questionnaires used, together with the instructions for filling them in, are presented in Appendix 1.

We used the same approach to the trial audit as we had in the pilot audit—a full description of which is provided in Chapter 3 of *Interim Report #2*. Briefly, it was our aim to administer questionnaires to about 25 workers in each mine (the numbers varied between 14 and 27), five front-line supervisors (the numbers varied between 3 and 7), three middle managers (the numbers varied between 0 and 5), the mine manager, the two JHSC co-chairs and two certified members, and the health and safety co-ordinator. At each site, we conducted follow-up interviews with about one third of the workers and front-line supervisors, about half the middle managers and JHSC members, and the mine manager and the health and safety co-ordinator. We also informally interviewed workers as we took a tour of the underground mine. In addition, we asked each mine to provide us with documentary evidence that they felt would serve to illustrate functioning of the

IRS at the site. Off site, we administered questionnaires to the MOL inspector(s) responsible for the mine, and attempted also to administer questionnaires to two senior executives and a company Director for each mine, and conducted follow-up interviews with all who answered the questionnaires.

3. AUDIT VALIDATION

In this Chapter we shall examine how responses to the questionnaires relate to the safety records of the mines visited. It is an exercise that is crucial to establishing the validity of the audit tool and, further, can provide insight on how the tool's questionnaires may be further modified to more accurately reflect the workings of the IRS.

3.1 OVERVIEW

Table 3-1 summarizes the extent of the data and information gathering. As may be seen, 267 questionnaires were administered which resulted in more than 9,000 individual questions being answered. (Aggregated data from the questionnaires are presented, on a question by question basis, for each mine and contractor firm in Appendix 2.) We conducted follow-up interviews with somewhat over half of the respondents. These interviews, together with the underground tours at each mine and the documentation each mine provided, gave us valuable insight (in a non-quantitative way) into how the IRS was operating at that location.

To help in the validation, we asked MASHA to provide the trial-audit mines' accident statistics for the period 1995 to the present; and this was done. The data MASHA provided were: total medical incident (TMI) frequency, lost time incident frequency (LTI), severity, and fatalities. We also received data on total hours worked and number of employees for each reporting period (annually, except for the year 2000). Because MASHA only had statistics for Inco's Ontario Division as a whole, we obtained the statistics specific to Creighton Mine from the Company itself.

A vast amount of data has been collected from the six mine visits and complete analysis will take many more months than the resources we have available for the project. Accordingly, we chose to concentrate on two facets of the data contained in the questionnaires. One involves a question that probes what respondents believe the IRS ***should be***, and the other looks at groups of questions that have a bearing on various aspects of actual IRS performance.

TABLE 3-1: *Tally of Questionnaires Answered and Follow-up Interviews Conducted During the Trial Audit*

	QUESTIONNAIRES ANSWERED	FOLLOW-UP INTERVIEWS
COMPANY DIRECTOR	4	4
SENIOR OFFICERS	10	9
MINE MANAGERS	8	8
MIDDLE MANAGERS	19	13
FRONT-LINE SUPERVISORS	34	18
WORKERS	151	56
CO-CHAIRS	11	8
CERTIFIED MEMBERS	15	13
H&S CO-ORDINATORS	7	7
INSPECTORS	8	8
TOTALS	**267**	**144**

3.2 THE QUESTION #1 DATA

The question that probed what respondents thought the IRS ought to consist, was probably the single most substantive change to the questionnaires that we had administered in the pilot phase of the project.[15] This question was based on the description of the IRS presented in Chapter 2. It took the form of a multiple-choice question,

1A. In the following list put a check mark against **every** statement that applies

"I believe that the Internal Responsibility System (IRS) **should be** where:

- **a everyone (from the rockface to the Boardroom) looks after health and safety as part of doing their job;**
- **b the workers are the only ones to look after their own and co-worker safety;**
- **c the supervisors and managers co-operate with the workers to head off and solve problems;**
- **d we all work together to make things better by reducing or eliminating the health and safety risks;**
- **e the Health and Safety Committee is directly responsible to make the workplace safe;**
- **f the Company President has some responsibility for the worker's health and safety;**
- **g the supervisor only makes sure the workers follow the rules and procedures;**
- **h if the worker cannot fix the problem, the supervisor will help find the answer;**
- **i if the worker cannot fix the problem, the only way out is to refuse to work;**
- **j the Health and Safety Coordinator finds the problems and tells the workers to fix them;**
- **k the Health and Safety Committee are resources;**
- **l the Health and Safety Committee help resolve issues when other ways fail;**
- **m we go beyond fixing problems and try to improve the health and safety in the work processes."**

and was the first question in ***every*** questionnaire—in other words, everyone in the chain of responsibility and in contributory roles answered the ***same*** question.[16]

Each individual's understanding of the IRS was scored by assigning 12.5% to each of **a**, **c**, **d**, **f**, **h**, **k**, **l**, and **m** and –20% to each of **b**, **e**, **g**, **i**, and **j**, and adding the result. Thus respondents would score 100% if they ticked **a**, **c**, **d**, **f**, **h**, **k**, **l**, and **m**, but

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15 There were other changes, including both the removal and addition of some questions. We also changed the way we referred to the IRS in the body of the questionnaires; a change we made because of encountering a number of respondents in the pilot phase of the project who were not familiar with the terms "Internal Responsibility System" or "IRS".

16 There were some very minor variations to make the statements appropriate to the IRS level to which the particular questionnaire was aimed, but the sense and intent of the statements were preserved.

no others, and 0% if they ticked all 13 alternatives or if they ticked none at all (–100% would be achieved if **b**, **e**, **g**, **i**, and **j**, but no others were ticked). In cases where there were negative scores (and there were a few), we assigned 0%. The aggregated results from all respondents are presented in Table 3-2 (and the aggregated results for each mine can be found in Appendix 2).

The results from this question give a very good overview of the current understanding of the IRS. Using the scoring scheme described in the paragraph above, the overall understanding of the IRS stood at 70 percent. In general, understanding improves as one moves up the line of direct responsibility within the mine site. Mine workers, as a group, show the lowest level of understanding and mine managers show the highest; understanding decreased somewhat at the corporate level. The health and safety component (JHSC members and health and safety co-ordinators) also showed high levels of understanding. Similar distributions in understanding can also be seen when the mines are looked at on an individual basis.

These observations show that there is room for improvement—in other words, the IRS message still has to get "down the line".[17] It is also noteworthy that everyone at the corporate level believed that "the Company President has some responsibility for workers' health and safety", but only two thirds of workers believed that this was so. Again, this indicates a need to get the IRS message "down the line".

The success of this multiple-choice question in giving a "snapshot" of the level of understanding of the IRS at a mine site became apparent to us early in the trial audit visits. And, because of this, we took the opportunity to combine the multiple-choice question with a supplementary question asking the respondents for an assessment of how the IRS was actually working at their workplace:

1B. Given my answer to the question 1A, I believe the IRS is working effectively in my workplace [CIRCLE ONE]:

Strongly Disagree	Somewhat Disagree	Somewhat Agree	Strongly Agree	Not Applicable	Don't Know

17 This was also commented upon by a worker health and safety representative during a debriefing at the end of one of our mine visits at which we presented the breakdown of responses to Question 1A for that mine.

TABLE 3-2: *Summary of Answers to Question 1A as Percentages*

"I believe that the Internal Responsibility System (IRS) **should be** where:	Wkr n= 151	FLS n= 34	MM n= 19	Mgr n= 8	Exec n= 10	Dir n= 4	JHS C n= 26	HS C n= 7	Insp n= 8	Avg. n= 267
everyone (from the rockface to the Boardroom) looks after health and safety as part of doing their job;	88	91	100	100	100	100	100	100	100	**92**
the workers are the only ones to look after their own and co-worker safety;	11	6	0	0	0	0	0	0	13	**7**
the supervisors and managers co-operate with the workers to head off and solve problems;	71	94	95	100	80	100	96	100	100	**81**
we all work together to make things better by reducing or eliminating the health and safety risks;	81	97	95	100	100	100	96	100	88	**88**
the Health and Safety Committee is directly responsible to make the workplace safe;	24	15	11	13	20	50	19	0	25	**21**
the Company President has some responsibility for the worker's health and safety;	67	79	79	100	100	100	81	86	78	**75**
the supervisor only makes sure the workers follow the rules and procedures;	9	3	0	0	0	0	4	0	0	**6**
if the worker cannot fix the problem, the supervisor will help find the answer;	77	91	79	100	80	100	88	86	75	**82**
if the worker cannot fix the problem, the only way out is to refuse to work;	11	3	0	0	0	0	0	0	0	**7**
the Health and Safety Coordinator finds the problems and tells the workers to fix them;	11	6	0	0	0	0	4	0	0	**7**
the Health and Safety Committee are resources;	66	79	79	100	100	100	92	100	88	**75**
the Health and Safety Committee help resolve issues when other ways fail;	68	76	89	50	40	25	77	57	88	**70**
we go beyond fixing problems and try to improve the health and safety in the work processes."	66	79	84	100	90	100	88	100	88	**75**
"SCORE"	**60**	**80**	**85**	**91**	**82**	**81**	**85**	**91**	**82**	**70%**

This supplementary question was used for four of the six mines in the trial audit. It was not, however, asked in the questionnaires for inspectors, senior executives, and company Directors. In scoring this question we assigned 0% to "strongly disagree". 33% to "somewhat disagree", 67% to "somewhat agree", and 100% to "strongly agree".

Combining answers to Questions 1A and 1B provides us with a means to judge the state of the IRS at the mine site. Working on the assumption that individual respondents' assessments of the IRS in their workplaces (i.e., Question 1B) are of greater validity the higher they scored on the understanding part of the question (i.e., Question 1A), we multiplied each individual's score for 1B by their score for 1A. The resulting product is a measure of the effectiveness of the mine's IRS according to that individual.

We then looked at the effectiveness of the mine's IRS, as judged by mine-workers' responses to Questions 1A and 1B (mine workers were the only group that really contained enough responses to make a comparison valid), and compared them with that mine's safety record. The statistics we chose for this comparison were TMI and LTI frequencies. In order to make the comparison meaningful, we needed to calculate the frequencies over a reasonably long period. Because the safety statistics for one of the four mines only started in 1997, we used the period of 1997 to April 2000 to make the comparisons.

In Figure 3-1, we plot the TMI and LTI frequencies against the effectiveness of the mine's IRS and, as may be seen, the correlation is remarkably good. The correlation coefficients (r) of 0.99 and 0.94 for TMI and LTI mean that the regression lines are significant at the 1% level and 5% level, respectively.[18] This is strong evidence that answers to the combination question, at least those given by workers, can be a good indicator of the safety performance of the mine.[19]

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18 Significance at the 1% level, means that such a regression line would be likely to occur by chance ***only*** one time out of a hundred and, at the 5% level, the likelihood would be one time out of twenty.

19 We should note, at this point, that assessments of IRS effectiveness as judged by answers from the other groups in the IRS were ***not*** significantly correlated with the safety statistics.

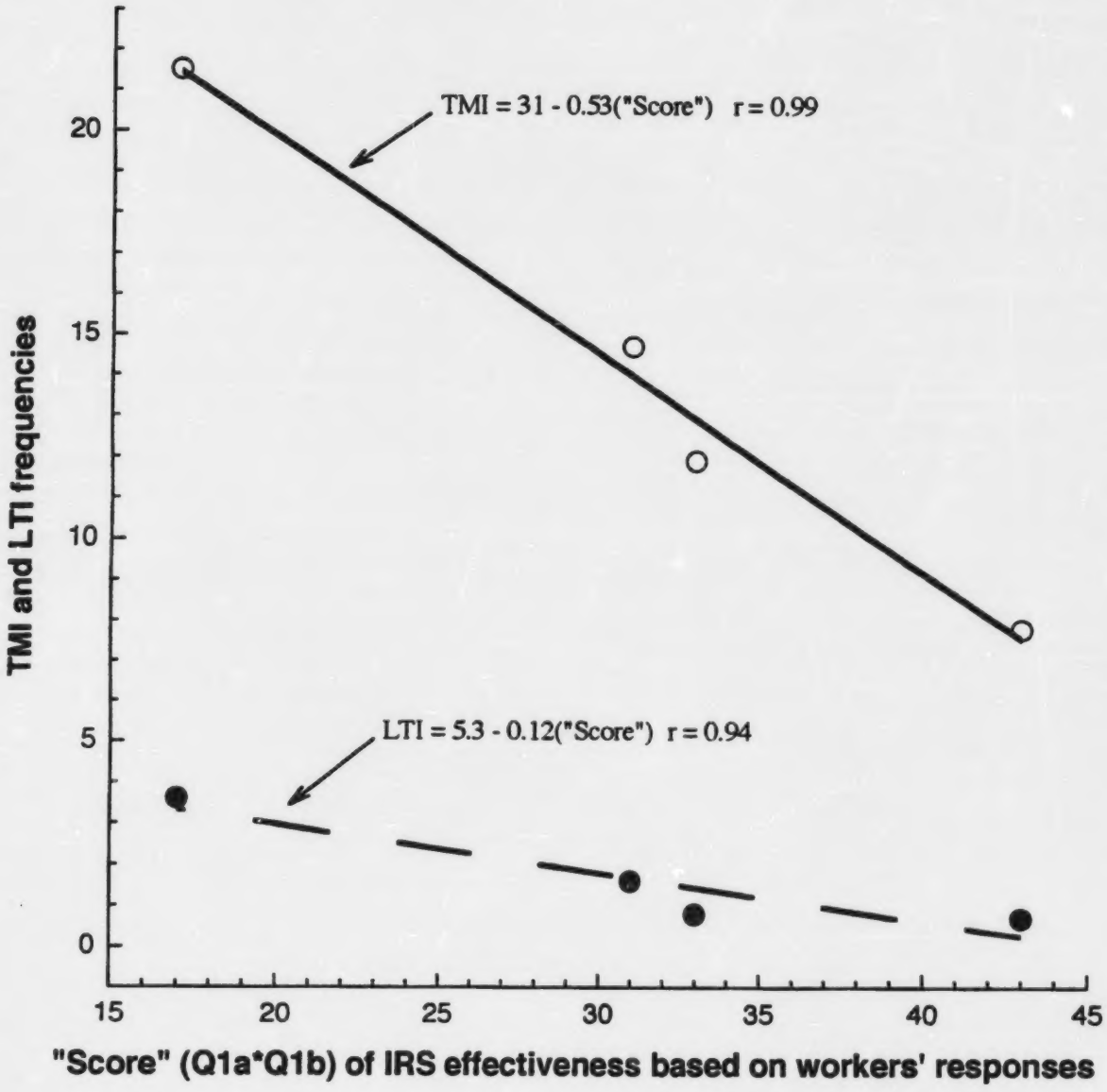

FIGURE 3-1: *A Mine's Safety Performance vs. the Effectiveness of Its IRS (as measured by workers' responses to Questions 1A and 1B)*

3.3 IRS PERFORMANCE INDICATORS

Although the Question 1 combination appears to give a reasonable view of a mine's IRS, it is rather one dimensional. The questionnaires contain considerable information from the answers to the 30 to 40 questions that each contain. Many of the questions were designed to probe the flow of information and responsibility up and down, and within, the responsibility chain. Accordingly, we looked at a variety of ways to combine groups of questions dealing with similar topics. The approach we used was based on, and expanded from, the one we adopted to obtain overall performance scores from the pilot audit (a general description of that process can be found in Section 4.2 of *Interim Report #2*). As we did for the pilot audit, we looked at the questions from three different standpoints—Understanding of the IRS, Leadership in the IRS, and Indicators of how the IRS is performing. Within these three main groupings, we had a number of question clusters that dealt with different aspects of the main group—the questions that comprised the main groups and the individual clusters, are presented in Appendix 3 and a description of the spreadsheet method we used to analyze the responses from the trial audit is presented in Appendix 4.

To investigate relationships with safety statistics, we chose the clusters of questions dealing with indicators of IRS performance. These clusters dealt with the nine indicators of IRS performance shown below and involved all levels of the responsibility system.[20]

Beliefs [34][21]	Responsibility [4]	Accountability [8]
H&S concerns & responses [16]	Initiatives & responses [26]	IRS issues & responses [45]
Demonstrating leadership [39]	Work planning [8]	Information flow [6]

Because these questions were asked at all the mines in the trial audit, we can compare the IRS performance with the safety records for all six. To make this comparison, we arbitrarily took the average of the scores of all nine indicators and plotted

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20 The actual questions that make up these clusters are presented in Appendix 3.

21 The figures in brackets indicate the number of questions in each suite.

TMI and LTI frequencies (again calculated for the period 1997 to April 2000) against this average. The result is shown in the graphs presented in Figure 3-2.

Considering the assumptions made in selecting the questions for the individual indicators and the arbitrariness of merely averaging the indicator scores, the correlation of overall performance indicator with the safety statistics is very good. The correlation coefficients (r) of 0.86 and 0.72 for TMI and LTI mean that the regression lines are significant at the 5% and 10% levels, respectively. However, when we look at the correlations of the individual indicators the situation is less clear:

INDICATOR	TMI	LTI	INDICATOR	TMI	LTI	INDICATOR	TMI	LTI
Beliefs	*	n/s	Responsibility	n/s	n/s	Accountability	n/s	n/s
H&S concerns & responses	*	*	Initiatives & responses	*	n/s	IRS issues & responses	n/s	n/s
Demonstrating leadership	n/s	n/s	Work planning	**	n/s	Information flow	*	*

** = significant at the 1% level; * = significant at the 5% level; n/s = not significant at the 5% level;

We have no ready explanation for why some indicators correlate significantly with safety statistics while others do not. The variation may have to do with the questions chosen to represent the particular performance indicator, or it may have to do with the manner in which various levels in the responsibility chain choose to interpret and answer the questions. It does appear, for example, that indicators with a higher proportion of responses from the worker questionnaire are more likely to show significant correlation with safety performance. We shall investigate these matters further in the next two Chapters when we explore how the trial audit questionnaires can, in light of the demonstrated relationships with safety performance, be "fine tuned" to produce the final questionnaires.

3.4 CONCLUSIONS

The data presented in this Chapter clearly demonstrate that answers to the questionnaires can be related to a mine's safety performance. The Question 1A and 1B combination, particularly as answered by mine workers, shows promise as an easily administered and interpreted tool that can give a quick assessment of the IRS at a particular mine.

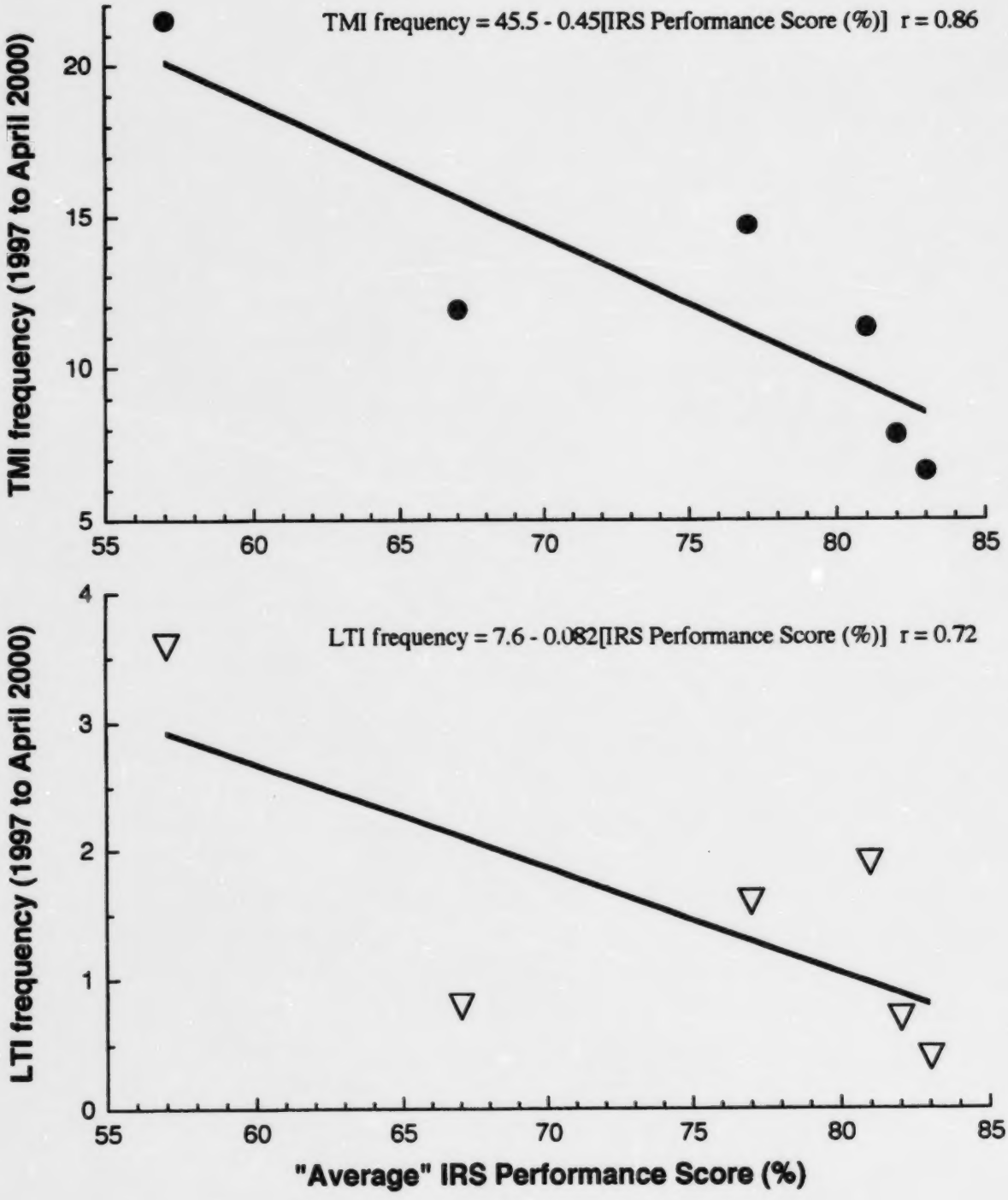

FIGURE 3-2: *A Mine's Safety Performance vs. the Combined Performance Indicator of Its IRS*

In addition, if it is accepted that the questionnaires do provide a measure of how the IRS functions in the mine (and we have no reason to suspect that they do not), then one can conclude from the correlations that better performance in the IRS will lead to a better safety record.

4. COMMENTARY ON THE IRS PERFORMANCE FACTORS

It is clear, from the results discussed in the last Chapter, that mines that generally score well on the IRS audit are the mines that have fewer injuries requiring medical aid. In this Chapter and the next we will be analyzing the questionnaire responses from the six mines in the trial-audit phase of this study (Appendix 2 provides a compilation of the responses). As mentioned in the last Chapter, for analysis purposes we grouped the questions into a series of "clusters", each with the same theme; e.g., questions involving the planning of the work are grouped together in the "planning cluster" (Appendix 3 provides a compilation of all these clusters).

We continue, in this Chapter and the following one, with addressing such questions as: "Why did the mines with the best safety performance score high in their responses?" Which questions, or clusters of questions contributed the most to a high score, and which did not—and why? It is an exercise that enables us to make suggestions as to how the audit tool may be improved.

The main difference between this chapter and Chapter 5 is that in the next chapter we will be analyzing the results from the perspective of each level in the organization—for example: how did the supervisors as a group do? or the mine managers?. This chapter is conceptual, the next chapter is more structural. There is much overlap between the two approaches, since we will, for example, be looking at the leadership actions and beliefs of supervisors in Chapter 5 after having examined "leadership", including the contribution of supervisors, in this chapter.

For clarity, in this Chapter and the next, we highlight the questions under discussion by drawing a border round them. Questions that we suggest as alternatives or additions are presented without a border.

4.1 INTRODUCTION

There are several purposes of this chapter. First, the analysis in this Chapter will aid in tightening up and refining the audit tool. If a cluster of questions did poorly in terms of correlation with OHS performance, then we could reduce the number of questions in that cluster (or eliminate the theme altogether). Or, we could modify the questions if we can see how they might have been misinterpreted. We can also ask more or less questions of certain groups within the IRS. What we will end up with are suggestions as to how to improve the audit tool. Second, some of the discussion will

better illuminate the rationale for a particular question—i.e., the links between the IRS model set out in Chapter 2 and the questions in the survey. Third, the conceptual analysis here (as opposed to the structural analysis in Chapter 5) allows the auditor or analyst to find the source of OHS problems in the organizational culture. The point of doing an IRS audit is not so much to get a global "score", but rather to probe within the IRS and find places where improvements can be made. The discussion in this chapter should aid the prospective auditor in doing a deeper IRS analysis.

As a general observation, there does appear to be a relationship between the preponderance of questions directed to workers and the degree of correlation between IRS performance and the medical aid statistics. There may be several reasons for this. In part, the larger numbers of worker respondents helps. But the reason may have more to do with how abstractions have to filter down and be translated into concrete improvements in conditions and practices in order to reduce risk. It is workers who can see best if policies, systems, leadership activities and so on are being put into practice. Conversely, it might be said that the more senior people are usually quite aware of what the correct answers should be to "system oriented questions". The enthusiasm of senior people to "look good" on the survey may have influenced results, giving a more homogeneous response across mines regardless of OHS performance.

In this regard, one possibility is that more questions should be directed to workers and fewer to more senior people. A variation on this is to ask workers and lower levels of management for the evidence of the beliefs or activities that we would ordinarily have asked senior people about directly. Alternatively, we could continue to direct the same number of questions to senior people, but could try to be smarter about how they are asked—e.g., asking senior people questions that have physical, observable corroborative aspects to them. This is not as easy as it might seem. As we move through our analysis, we will be suggesting changes to the audit tool, many of which will be based on the observation that self-assessment questions tended to be weaker than questions based on the assessment of others.

The questions have been grouped in their "clusters" and then sub-grouped into functional sets of questions. When going beyond the gross scoring in an attempt to find out why and how the organization scored as it did, and what changes might be made, it is these sub-groups that will organize our thoughts.

4.2 THE PLANNING CLUSTER

There were only eight questions in this cluster. Of these, three were directed to workers and three to front-line supervisors (FLSs). Thus there was a strong emphasis on the views of the people closest to the work. This cluster of questions had a very good correlation with OHS performance. The workplaces in which workers and supervisors were involved heavily in planning the work tended to be the mines where there were fewer accidents (as measured by medical aid cases).

A well functioning IRS means that thinking and doing are integrated together in the same minds. Work should not be done by trial and error, as the "error" means accidents. There are many techniques that should be used to plan the work. It is critically important who does them. Under "scientific management", commencing in the early 20th century, the people doing the work were not to do the job planning but were to follow procedures and plans developed by the "scientific manager".[22] The quality movement of the 1980s sought to bring back together the thinking and doing of work; not just solving problems, but improving processes.[23] The people most closely involved in the work are in the best position to see where things can go wrong and to suggest practical ways to eliminate or reduce risk. The same people are in the best position to see ways of improving things.[24]

Questions W15 and FLS20 below are about the actions of supervisors. A supervisor might rely on someone in a staff function to do job planning. Or, no one might do job planning. The best workplaces have supervisors doing planning activities.

Worker	the last time I had to use new equipment, processes or materials, it was obvious that my supervisor had thought out how the job should be done, to avoid learning by trial and error [W15]
FL Supv	I do task analysis, job planning (and similar analyses) so as to avoid learning by trial and error with new equipment, processes and materials. [FLS20]

22 "Scientific management", also known as "Taylorism", was a school of thought that was aimed at improving productivity. It is discussed in many introductory management textbooks. A good overview may be found in the recent biography of Frederick Taylor, *The One Best Way* [R. Kanigel, *The One Best Way: Frederick Winslow Taylor and the Enigma of Efficiency*. New York, NY: Penguin Books (1997)].

23 The quality principles are expressed in many management techniques such as "worker empowerment", the "team approach", the "flattening of organizations", "kaizen" or continuous improvement, and so on. [See, for example: W.E. Deming, *Out of the Crisis*. Cambridge, Mass.: Massachusetts Institute of Technology, Center for Advanced Engineering Study (1986).]

24 See, for example, C. Walker, "The real experts", *OHS Canada*, **16**(3):62 (2000).

Question FLS20 is a good question, but it did tend to have a generally positive response regardless of OHS performance. Who wants to admit that they learn by trial and error? The question would sound less negative if it read:

FL Supv I do task analysis, job planning (and similar analyses) prior to my workers working with new equipment, processes and materials.

It is good if the supervisor is doing job planning. It is even better if the operative worker is involved in that planning. Questions W11 and FLS39 reveal whether there is a gap between workers and supervisors:

Worker	I am involved in the planning of the work in my workplace [W11]
FLS	I involve my workers in the planning of safe work for their workplaces [FLS39]

Where there is an opportunity for the work plan to be adjusted or modified because of the insights of the people most familiar with the workplace, materials, equipment and so on, we are likely to get the safest work plans. In the poorly performing workplaces we would expect to see workers handed their tasks for the day, and then perhaps being in the position of following a plan that they can see is not the best from a risk point of view, or perhaps deviating from the plan in ways that would seem to reduce risk, but suffer from lack of coordination with others. Far better that everyone affected and knowledgeable has an opportunity to modify the work plan. The responses to worker Question W11 did vary across the mines in a pattern that contributed in large part to the successful correlation of this cluster. The answers from the front-line supervisors FLS39 were not as clear cut.

We inserted Questions MM22 and M18 to double check the responses to the two questions discussed in the previous paragraph:

Mid Mgr	do you check that the crew members are involved in planning of safe production in their workplaces? [MM22]
Manager	do you check that the crew members are involved in planning of safe production in their workplaces? [M18]

There was close to unanimous positive response to the two questions by these upper levels of mine management, regardless of mine OHS performance. This finding implies that these questions' contribute little to the correlation of the cluster with OHS performance. Yet there is an educative benefit to asking these questions over time. Supervisors will be more likely to keep up the good practices of pre-job meetings and worker involvement in work planning if their own supervisors are asking about such activities.

The findings from these four questions (W11, FLS39, MM22, AND M18)—workers were not unanimous in saying they're involved in planning the work (many indicated that they were not); yet two levels of managers say that workers are involved in planning—provides a good illustration to a prospective IRS analyst. The fact that answers from one level in the IRS are not corroborated by answers from other levels in a workplace should spark discussion and further enquiry.

Where planning is not done, or not done well, we see that OHS is not properly integrated into the work. Workers have production targets that are not linked to appropriate levels of resources, thus potentially creating a clash between production and OHS. A well functioning IRS will have job planning done so well that targets and resources are matched. In the following questions we see that the best performers in OHS had a high ranking for target and resource matching. These concepts are addressed by the following two questions:

Worker	my supervisor is realistic when setting tasks and allocating resources, so that I can meet targets safely. [W16]
FL Supv	I am realistic when setting tasks and allocating resources, so that people can meet targets safely. [FLS21]

Answers to worker Question W16 gave a good pattern across the mines, and contributed to the cluster's correlation with OHS performance, but the answers to front-line supervisor Question 21 was not as clear. While there is an educative value to asking front-line supervisors if they're "realistic", it is probably too much to expect someone to confess that they are, in effect, being "unrealistic".

A suggestion for improvement in the Planning Cluster might be to ask whether front-line supervisors believe that their own supervisors (the middle managers and, even, the mine manager) are being realistic in setting targets for front-line supervisors. If we want front-line supervisors to be doing an excellent job in their OHS activities, and to believe that OHS is a primary, integrated organizational goal, then they should not be put in unrealistic situations with their targets and available resources. The complementary question would be whether mid-level managers believed they were realistic in setting objectives for direct supervisors; self-assessment doesn't help as much as the assessment of many others. Accordingly, the cluster could be improved by replacing FLS21 with the following group of questions:

FL Supv my ***own*** supervisor is realistic when setting tasks and allocating resources, so that my workers and I can meet targets safely. [FLS]

Mid Mgr the mine manager is realistic when setting tasks and allocating resources, so that my people can meet targets safely. [MM]

CC&CM the mine manager is realistic when setting tasks and allocating resources, so that people can meet targets safely. [CM]

The chances of an FLS being realistic consistently when setting tasks and allocating resources is not good if that person's own supervisor isn't being realistic.

Overall, there were surprisingly few questions in the Planning Cluster. Why so few when the Planning Cluster gives such a good prediction of OHS performance? The answer is most likely because if the answers to the above questions are excellent, there are other things that are going well in the background. Peoples' beliefs about safety are likely to be sound and there is undoubtedly going to be good communication between workers and direct supervisors, among other things, when planning is well done.

While there were only eight questions in this cluster, it was the worker questions (e.g., W11 and W16) which gave the variation in response between mines that drove the correlation between good answers and OHS performance. Questions based on the self-assessment of supervisors and managers (e.g., MM22 and M 18) had almost everyone agreeing "they were good" regardless of actual mine performance. Yet, we wouldn't want to trim this cluster by dropping these two questions because the questions do have educative value.

4.3 THE INFORMATION CLUSTER

There were only 6 questions in this cluster and only one of them was directed to workers. However, the answers to this cluster, taken as a whole, correlated significantly with OHS performance.

Workplaces where people doing the work get good OHS information quickly are going to be workplaces where people making daily, practical decisions about work and OHS will be making excellent decisions about risk reduction. It has always been said about the IRS that one of its most basic principles is openness about OHS. In law, this has been referred to as the "right to know", more accurately described as various "duties to tell" on the part of the employer and supervisors. In general, we can say that people are making better decisions throughout the IRS if they have the right information about hazards and controls. Information is the "lubricant" for successful problem-solving in the system.

How do we measure something as abstract as "the right to know"? Simply by asking if people doing the work and supervising the work have the information they believe they need. One can see how fundamental and critical Questions W28 and FLS38 below are.

Worker	I get prompt and useful information from supervision about H&S problems that might affect my workplace [W28]
FLS	I get prompt and useful information from management about H&S problems that might affect the workplaces under my charge [FLS38]
Mid Mgr	I make sure that the supervisors have the information needed for the crews to do the jobs safely, and that they pass it on to the crews [MM18]
Manager	I make sure that the supervisors have the information needed for the crews to do the jobs safely, and that they pass it on to the crews [M15]

The two best OHS performers were the mines whose workers were largely in agreement that they were getting good information from supervision. Conversely, where a majority of the workers didn't believe that they were getting good information, as was the case with the poorer performing mines, then we can begin to see where some improvements can be made.

We did not ask front-line supervisors if they were *giving* information to workers. The front-line supervisors were asked if they too were *getting* good information. There were no front-line supervisors who strongly disagreed with the statement in Question FLS38, but there was mild disagreement in the poorer performing mines. This is in contrast to the complete agreement voiced by FLSs in the two best performing mines that they were getting good information.

Questions MM18 and M15 tell us if the understanding of openness and the need for OHS communication exist at higher levels in the organization. A poor response for the worker and supervisor questions might be traced to a poor response on the part of mid and senior managers. However, there was essentially no disagreement, among the respondents from all the mines, with Questions MM18 and M15. Thus we have a situation where the mines with poor OHS performance have workers who do not all believe they are getting good information, but their senior supervisors and mine managers say they *are* getting it. This is clearly a problem for the poorer performing mines.

While there are many ways for information to flow into the hands of the people doing and supervising the work, one obvious source would be the OHS professional. The

OHS professional has many roles in relation to the IRS. One of the important ones is to be a resource for the workers and supervisors. We can learn from experiences of other workplaces, the more when they are similar—Question OH37. Today with enormous information resources at hand through the Internet, as well as traditional sources, we need an ability to get relevant timely information flowing from many sources to the workplace. The OHS professional is best suited be to an information seeker, information "filter", information assessor and information deliverer.

OHSP	when you hear about a safety problem in other mines, do you ensure that the supervisors and JHSC know, so that it can be discussed with the crews? [OH37]
OHSP	I use many different resources to gather H&S information needed by the supervisors, their crews, and the JHSC [OH38]

Answers to questions OH37 and OH38 contributed nothing to the correlation between this cluster and OHS performance. Every respondent said "yes" to OH37 and everyone strongly agreed with OH38. The cluster would be improved by replacing these questions with the following:

FLS	In the past year, the OHS professional in my workplace has provided me with useful and timely health and safety information [FLS]
CM	In the past year, the OHS professional in our workplace has provided the JHSC with useful and timely health and safety information [CM]
FLS	In the past year, the JHSC for my workplace has provided me with useful and timely health and safety information [FLS]
W	When accidents happen in other mines, supervision in our workplace makes sure we hear right away what happened and how to prevent it in our mine [W]
OHSP	Senior management gives me sufficient resources and opportunities to gather health and safety information from sources outside the workplace that I can then provide to supervisors, their crews and the JHSC [OH]

4.4 THE "BELIEFS" CLUSTER

There were 34 questions in this relatively large cluster and, taken as a whole, the answers gave a reasonable correlation with OHS performance. The questions were distributed among all workplace parties, with a slight emphasis on workers and supervisors, and covered the following topics:

1. whether a person believed he or she could go to the next level in the IRS without fear of a bad reaction;
2. whether a person believed in a fundamental conflict between OHS and production or profitability;
3. whether a person believed that OHS was a part of quality management;
4. whether a person believed that following procedures is in conflict with production;
5. whether a person viewed OHS goals as being beyond "mere regulatory compliance"; and
6. whether a person believed the role of the JHSC to be one of "internal auditor".

While there are problems reliably measuring beliefs, and while there are debates as to the relative importance of beliefs and behaviours, we assume here that good indicators of the effectiveness of the IRS will be the presence of certain fundamental ideas in the minds of individuals in the workplace. It stands to reason that consistent and persistent behaviour of a desired nature is not going to come about unless a person truly believes in the values or principles that guide behaviour in the desired direction.

In general, we can say that there was usually good variation within the worker responses, variation that followed the OHS performance of the mine. Questions that required self-assessment by supervisors and managers usually resulted in relatively homogeneous (and positive, from the standpoint of actions by the respondents) responses across mines, thus contributing little to the correlation of the cluster with OHS performance.

The four questions below are very fundamental. They exemplify one of the 14 quality principles of Deming, that fear must be driven out of the workplace for quality (and thus safety) to succeed. Taken as a whole, the answers given to these four questions, did not correlate with OHS performance; the worker question (W2), however, did. Essentially, with a couple of exceptions, front-line supervisors, middle managers and mine managers were all of the opinion that those under them could come with any H&S concern without fear of "a bad reaction".

Worker	I believe I can go to my supervisor with any H&S concern or problem without fear of a bad reaction [W2]
FL Supv	I believe my people will come to me with any H&S concern or problem without fear of a bad reaction [FLS2]

Mid Mgr	I believe my people will come to me with any H&S concern or problem without fear of a bad reaction [MM2]
Manager	I believe my people will come to me with any H&S concern or problem without fear of a bad reaction [M2]

The issue of a bad response to safety concerns is closely related to both the Planning and Information clusters. Workers and supervisors are not going to work together to drive risk down in planning activities if fear is present. Information flow is also not going to be smooth in a fearful environment. The answers reveal the presence or absence of other potential confounders of a well functioning IRS. Where discipline for OHS is done poorly, creating a "shoot the messenger" atmosphere, then the openness necessary for broad based decision making will be absent. Where middle managers are not doing a good job of overseeing supervisors, then it provides possibilities for poor supervisors to carry on without correction—a poor supervisor, to our minds, is one who has, among other attributes, the inability to listen. A poor supervisor with negative and uncontrolled personality traits may be the reason why communication will be blocked by fear. There will also be a correlation with some other beliefs. If it is widely believed that OHS and production are opposites, then complaining about safety may be career limiting.

A well functioning IRS means, among other things, that people will take problems, concerns and opportunities to the person above them in the organization where needed. Questions W2 and FLS2 are about the worker-supervisor interface. A problem would exist where a high proportion of workers felt they couldn't go to their supervisor, but supervisors were declaring that workers were free to come to them. The best workplaces would show unanimity.

Workers in the mines with the better OHS performance tended to agree more with the statement in W2 than workers in the poorer performing mines. Question W2 contributed strongly to this cluster's good correlation with OHS performance. Supervisors across the mines generally responded positively to Question FLS2, although oddly there were a few supervisors who strongly disagreed that their workers could come to them freely with concerns. All the responses by senior supervisors and managers were positive. We could likely increase this cluster's correlation by replacing MM2 and M2 with the following:

FLS	I believe I can go to my *own* supervisor with any health and safety concern or problem without fear of a bad reaction [FLS]

Mid Mgr I believe I can go to the mine manager with any health and safety concern or problem without fear of a bad reaction [MM]

Under a well functioning IRS, problems, concerns and opportunities should flow up the organizational structure reaching the level where there is adequate authority or resources for resolution. Most day to day issues of physical conditions, work processes and behaviour would be dealt by workers and front-line supervisors. But some issues that deal with the management system—with its policies, programs, communication, resources, conflicts in objectives, and so on—would have to move up the IRS. If supervisors are afraid to raise issues with more senior people then those categories of issues would be blocked from effective resolution. Many of those issues are what we would refer to as "fundamental causes" of accidents and exposures. Thus, a poor ranking on fear will result in poor OHS performance. The level at which fear arises will tell us the nature of the most serious OHS problems.

The next sub-grouping of eight questions below is concerned with a perceived clash between safety and production. At the operative end of an organization, OHS may be perceived to be in conflict with production—a "zero sum game" where more safety gets you less production and vice versa. At the higher level of the organization, production is replaced with profitability or shareholder return—but the perceived, potential conflict is the same. Usually the existence of the conflict can be understood as a problem of timescale or horizon. Within a very short period of time, or in a "one off" situation, there can appear to be a conflict between OHS and production. But the longer the time horizon and the more iteration of work processes, the more it becomes obvious that it is poor safety that will interfere with production and profitability.

Where we understand from loss causation models that all types of losses (occupational, property, occupiers' liability, environmental, production or service interruption, quality problems) are related, then it can be understood that the costs of poor OHS performance are going to be much greater than the typical measurements related to workers' compensation costs. Safety and production are not in conflict. Poor safety can eliminate production.

Management in some organizations will have done a better job than others in educating people on these issues. It may also be said that better managed organizations take a longer view of things and are thus more inclined to promote the view that OHS and production are not in conflict.

Worker	I believe that improving H&S performance almost always results in a loss of production [W23]
FL Supv	I believe that improving H&S performance almost always results in a loss of production [FLS27]
Mid Mgr	I believe that excellence in H&S performance would come at a loss in production: [MM37]
Manager	I believe that excellence in H&S performance would come at a loss in production: [M43]
SEO	I believe that excellence in H&S performance would come at a loss to shareholder return [SEO10]
Director	I believe that excellence in H&S performance would come at a loss to shareholder return [D9]
CC&CM	I believe that our Company's leadership in H&S performance in the industry would come at a loss of production [CC9]
OHSP	I believe that our Company's leadership in H&S performance in the industry would come at a loss of production [OH9]

As usual, the responses for workers gave a good distribution across mines. So did the front-line supervisor answers. The pattern for middle managers was not as clear, and mine managers were in uniform disagreement that the production and safety conflict regardless of mine OHS performance.

In retrospect, the wording of Questions CC9 and OH9 might be rephrased to avoid suggesting that all companies were "leaders in H&S performance". Even in well performing organizations, there can be a perceived conflict between production and "going too far" with OHS. If lost time events have been brought very low, why spend more time, money and effort on OHS? Surely there is a point of diminishing returns? Even if lost time has been brought to zero, there will still be residual risk that can cause a loss at any time. Indeed, many organizations get lulled into a false sense of security as their OHS statistics go down. It's hard to motivate people about "losses" when there haven't been any lately. Thus many good organizations get a "see saw" effect in their statistics over time.

This is where we see the connection between OHS and quality. By going beyond merely trying to reduce losses and getting people to focus on improving processes, OHS performance can be taken to higher levels of excellence. By coming up with an innovation to improve worker comfort, a creative worker will likely have caused improvements in productivity and well as a reduction in ergonomic costs. There are

many principles, concepts and techniques in modern quality management that can be usefully applied in a direct fashion to risk reduction with great OHS benefits. So, a shorthand way of determining the degree of penetration of quality ideas is to simply ask about the connection, as in the following five questions.

Mid Mgr	I believe that H&S performance is part of quality management within the Company. [MM27]
Manager	I believe that H&S performance is part of quality management within the Company. [M22]
SEO	I believe that H&S performance is a component of quality management within the Company. [SEO28]
Director	I believe that H&S performance is a component of quality management within the Company. [D24]
OHSP	I believe that H&S performance is part of quality management within the Company. [OH21]

Unfortunately, these are the sorts of questions that a well informed manager would know the "right answer" to, so we see rather homogeneous and positive responses across the mines regardless of actual OHS performance. It would be better, therefore, if we could ask some questions of workers as to their impressions of whether senior management believes that OHS is part of the quality approach.

The point of the following two questions is that there is a possible perceived conflict between procedures and production. The assumption here is that company procedures have been prepared with OHS in mind, i.e. that these are "OHS procedures" at the end of the day. So this is a version of the question whether there is a conflict between production and OHS. A belief that following procedures will result in problems over production will result in workers deviating from procedures, and thus increasing risk.

Worker	I believe that if I follow Company procedures exactly, my supervisor would criticize me for poor production performance [W14]
FL Supv	I believe that if my people follow Company procedures exactly, my supervisor would criticize me for poor production performance [FLS18]

Both questions are useful and corroborative of each other. And both showed variation in answers across the mines. However, neither question, taken singly or together, showed significant correlation with OHS performance.

In organizations where people are operating under the best of intentions, we can see that procedures can be overly rigid or can be unrealistic. Poor procedures can be the

result of not linking thinking and doing in the same people. People who do the work should be involved in writing the procedures so as to avoid rigidity and non-realism. It may be the case that following procedures will in fact cause a loss in production. The procedures should be reviewed. But in the short term, deviating from the procedure for production reasons may subvert those elements of the procedure that are there for safety reasons. So, if strong agreement with W14 and FLS18 are observed, this is a factor that would have to be investigated.

The point of the following eight questions is to determine how far people in the organization believe they have to go for OHS. "Mere regulatory compliance" is thought by many in OHS circles to be a non-ambitious, minimal goal. Certainly where quality principles have caught hold we would expect to see people referring to their OHS goals in more lofty terms. So we would expect the best performers in OHS to be striving for goals beyond regulatory compliance.

Worker	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [W22]
FL Supv	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [FLS26]
Mid Mgr	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [MM26]
Manager	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [M21]
SEO	-in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [SEO19]
Director	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [D17]
CC&CM	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [CC12]
OHSP	in my view, it is sufficient for the Company to be in compliance with OH&S Act and Regulations, and Ministry orders [OH12]

Technically speaking, the questions above are not as strong as they might be. Where respondents understand that legal compliance includes both the specific and detailed regulatory standards and the broad performance standards of the general duty clauses in the Act, there may be an inclination to answer affirmatively—on the basis that going beyond the legal standards means going beyond general due diligence, which arguably means going beyond what is rational or reasonable. The questions, therefore,

may have to be reconsidered. There may be too many subtleties here. The worker responses did not give a particularly clear pattern. The front-line supervisor responses gave a better pattern. We might consider eliminating most of the above questions and replacing them with questions enquiring about how respondents rate their immediate superiors' or higher management's beliefs in going beyond mere compliance.

Worker	Supervisors and managers at this mine appear to believe that we should go beyond just being in compliance with the Occupational Health and Safety Act and regulations [W]
FLS	Senior people in this mine appear to believe that we should go beyond just being in compliance with the Occupational Health and Safety Act and regulations [FLS]
CC&CM	Supervisors and managers appear to believe that we should go beyond just being in compliance with the Occupational Health and Safety Act and regulations [CC12]

A belief that the JHSC is an internal auditor is a sign that the respondent believes there is an "auditable system" in place (the correct "systems language" is being used). As well, we are capturing whether the respondent believes the JHSC is doing OHS directly or indirectly. If you believe the JHSC is responsible for doing OHS directly, then you wouldn't be happy with the auditor description. If you think the JHSC is doing OHS directly, then the chances are that you are more tolerant of the people in the central core of the IRS sloughing off their responsibilities on the JHSC. Further, if you believe that the JHSC is not much use for anything, and should not be entrusted with anything so serious as "auditing", you will also tend to answer the question in the negative.

CC&CM	I believe that the JHSC is an 'internal auditor' of the Company's "IRS" [CC17]
OHSP	I believe that the JHSC is an 'internal auditor' of the Company's "IRS" [OH17]
CC&CM	I believe that the OHSP is an 'internal auditor' of the Company's "IRS" [CC18]
OHSP	I believe that I am an 'internal auditor' of the Company's "IRS" [OH18]
Worker	I believe that one of the jobs of the worker member of the JHSC is to 'keep the system honest', so that my supervisor will respond quickly and effectively to my safety concerns and those of my co-workers [W19]
FL Supv	I believe that one of the jobs of the worker member of the JHSC is to 'keep the system honest', so that there is a quick and effective response to the safety concerns of my people [FLS24]
Mid Mgr	I believe that one of the jobs of the worker member of the JHSC is to 'keep the system honest', so that I respond quickly and effectively to my safety concerns of my people [MM25]

4.5 THE "H&S CONCERNS & RESPONSES" CLUSTER

There were 16 questions in this cluster and they dealt with the way people interacted between levels in the organization with respect to handling OHS concerns and complaints.

There were six questions that focused on the interaction between the worker and the direct supervisor:

Worker	in the last year, have you discussed with your supervisor how important it is to bring your H&S concerns and complaints to him/her? [W4]
FL Supv	in the last 3 months, have you encouraged your people through discussion with them to bring H&S problems to you and not to cover up problems? [FLS6]
Worker	within the last 3 months, have you made reports and/or complaints to your supervisor about H&S? [W6]
FL Supv	in the last month, have you received reports and/or complaints from you crew about H&S? [FLS9]
Worker	my supervisor responds promptly and appropriately to every report and complaint by me about H&S [W9]
FL Supv	I respond promptly and appropriately to problems and issues raised to me by my crew regarding H&S [FLS15]

The first two questions, W4 and FLS6, were aimed at establishing whether there was an effort made to encourage reporting of problems and raising of concerns. The IRS thrives on issues. Where supervisors do not encourage reports, or actually discourage them, then risk will rise. Supervisors who actively encourage workers to bring them problems will be further ahead than passive supervisors, however well-intentioned the latter might be.

Answers to Question W9 correlated significantly with OHS performance. For the other questions in this block, the worker responses were both positive and negative and the supervisor responses tended to be quite positive. Discrepancies between worker responses and FLS responses would tell us something is wrong within the organization.

There were two questions that asked whether in fact workers were bringing concerns, Questions W6 and FLS9, and then two questions that probed whether the supervisor responded properly to those reports, W9 and FLS15.

A worker might be impatient with a slow response from a supervisor, but it is not always the case that the delay is the fault of the supervisor. Some issues will be beyond

the authority or ability of the supervisor to solve and, under the IRS, are properly to be reported up to the supervisor's manager. Hence, a poor response to Question W9 should be checked against the supervisors' answers to Question FLS14 below as to whether managers are responding to supervisors.

The IRS is supposed to ensure that problems and concerns get moved to the appropriate level in the organization. So, just as we want to measure how well workers and direct supervisors interact, so we want to see how well mid-level managers respond to the issues that front-line supervisors bring forward. It must be noted that not all the issues passed from the direct supervisor up to the next level will have originated with the worker. Supervisors are supposed to take initiative on OHS problems themselves. So some issues dealt with by middle managers will have arisen from the supervisors themselves.

FL Supv	within the last 3 months, have you taken H&S problems that were outside your authority, or beyond your ability to solve, to your supervisor? [FLS10]
Mid Mgr	in the last 3 months, have you received reports and/or complaints from your supervisors about H&S? [MM9]
FL Supv	my supervisor responds promptly and appropriately to problems and issues raised by me regarding H&S? [FLS14]
Mid Mgr	I respond promptly and appropriately to problems and issues raised to me by my crew regarding H&S [MM16]

And, in turn, we are interested in the interaction between the middle manager and the more senior manager. In the language of the mines, we are interested in the interaction between superintendents and the mine manager.

Mid Mgr	in the last 3 months, have you taken H&S problems that were outside your authority, or beyond your ability to solve, to your manager? [MM10]
Manager	in the last month, have you received reports and/or complaints from your workforce about H&S? [M8]
Mid Mgr	my manager responds promptly and appropriately to problems and issues raised by me regarding H&S? [MM15]
Manager	I respond promptly and appropriately to problems and issues raised to me by the workforce about H&S? [M14]

We expect the central core of the IRS to be a "filtering mechanism" so that many small issues can be dealt with quickly by workers and front-line supervisors. But issues involving greater resources or having cross-organizational impact will be the larger issues

that need to move up the organization. Few reach the top. The many small issues will tend to be direct causes of accidents and exposures. The few large issues will tend to be the system errors that are the root causes of the direct causes.

It is possible that mid to senior management views OHS solely in terms of the many direct causes of accidents that people at the first two levels are concerned with. Reporting up beyond the front-line supervisor would then be discouraged. "We're paying you not to bother us with those small problems". So, the questions below seek to capture the ease of the upward movement of problems.

As usual, we tended to get fairly homogeneous and positive responses on the self-reporting by managers and, hence, observed no correlation with the answers to these questions and OHS performance.

The following two questions may seem a little repetitious. We are, however, trying to measure a cooperative team approach to problems. As well, all OHS issues should be dealt with in some suitable manner. Too often, in poorly run workplaces, OHS issues seem to fade away or disappear over time without actually having been properly addressed. Questions MM6 and M5 attempt to measure cooperative problem solving at the mid to senior levels of management.

Mid Mgr	when there is an unresolved H&S concern, do you work together with the supervisors and crews to sort it out? [MM6]
Manager	when there is an unresolved H&S concern, do you work together with your managers, their supervisors and crews to sort it out? [M5]

Unfortunately, the supervisors and managers responding to these two questions were uniformly positive, regardless of mine OHS performance. We could ask the following questions instead:

CC&CM	when there is an unresolved H&S concern, do the different levels of management and supervision work together to sort out the problem? [CC&CM]
OHSP	when there is an unresolved H&S concern, do the different levels of management and supervision work together to sort out the problem? [OH]

4.6 THE "INITIATIVES & RESPONSES" CLUSTER

There were 26 questions in this cluster. Only three were directed to workers, and five to front-line supervisors. Middle managers were emphasized with seven questions

directed to them. There was no real correlation between the answers, taken as a whole, and OHS performance.

We asked a lot of questions about people taking initiative on OHS. The Concerns Cluster, just examined, was about traditional concerns, reports and complaints. That is, traditionally, people see problems—defects, contraventions, dangers—and they deal with the problem or bring it to someone else. But the quality approach tells us that we want people to go beyond the negative and the traditional. We want people to think of ways of improving the processes they are involved with.

The following group of nine questions essentially "set the stage". The first four ask whether efforts are being made to create an atmosphere where everyone understands that initiative and creativity are desired, and that just responding to problems is not enough.

Manager	have you shown the Company officers how the H&S management system has procedures and programs that encourage individual initiative to continuously improve work processes? [M39]
SEO	has the VP (Mine Manager) shown you how the H&S management system has procedures and programs that encourage individual initiative to continuously improve work processes? [SEO26]
CC&CM	the H&S management system has procedures and programs that encourage individual initiative to improve work processes (beyond compliance with existing H&S rules) [CC20]
OHSP	the H&S management system has procedures and programs that encourage individual initiative to improve work processes (beyond compliance with existing H&S rules) [OH20]

But we need to know whether this encouragement of initiative filtered down the organization. Many "worker involvement" programs seem invisible outside of the human resources department. We would expect that for a climate of initiative to exist, there must be open, frequent discussion of desirability of initiative. Hence, the following questions:

Worker	within the last year, have you discussed with your supervisor how you can take the initiative to improve H&S in your work? [W5]
FL Supv	have you taken steps to ensure that your people understand that you want them to do more than just follow the safety rules; that is that you want them to take initiative to improve work practices so work will be safer? [FLS8]
Mid Mgr	have you taken steps to ensure that your people understand that you want them to do more than just follow the safety rules; that is, that you want them to take initiative to improve work practices so work will be safer? [MM8]

FL Supv	within the last year, have you discussed with your supervisor ways of improving how you can encourage your people to take initiative to suggest improvements in how to do the work? [FLS7]
Mid Mgr	within the last year, have you discussed with your manager ways of improving how you can encourage your people to take initiative to suggest improvements in how to do the work? [MM7]

Then, obviously, we want to know if people are actually taking initiative, and that is the aim of the next two questions:

Worker	within the last 3 months, have you made suggestions for the improvement of work processes to your supervisor? [W7]
FL Supv	within the last month, has at least one of your people taken initiative (without you asking) and suggested ways to improve H&S performance? [FLS11]

Question W7 asks the worker about improvements of work processes generally, not specifically about OHS improvements. Suggestions to simplify processes or to make things more comfortable have many positive benefits, including OHS benefits. A company encouraging OHS suggestions but not other suggestions would not be as far ahead in strictly OHS terms as a company that encouraged suggestions of all kinds. Positive answers to Questions W7 and FLS11 will be a sign that "thinking" and "doing" are properly integrated together, and that workers (and supervisors) are not just following orders. We are gaining the expertise of the thinking worker—the person in the best position to come up with many small (and occasionally large) improvements. This is the magic "rocket fuel" driving the best quality performers. Positive answers here also tell us something good about openness and communication.

We discussed the importance of moving problems up the central core of the IRS in the "Concerns Cluster". The same importance attaches to moving suggestions for improvements up the organization. Some opportunities for improvement are about big issues that need greater resources or authority. As well, we expect people at all levels to be taking initiative. Just as a worker is the expert regarding the detailed work processes and work conditions, it is the mid-level manager who is best suited to identify an opportunity for improvement of the mid-level management processes that mid-level manager is involved in. We do not want mid to senior people believing that it is only the people in the lower levels of the organization that should be taking initiative to improve processes—hence these next four questions:

FL Supv	within the last 3 months, have you taken the initiative (without your supervisor asking) and suggested to your supervisor ways to improve H&S performance? [FLS12]
Mid Mgr	within the last month, has at least one of your supervisors taken the initiative (without your asking) and suggested ways to improve H&S performance? [MM11]
Mid Mgr	within the last 3 months, have you taken the initiative (without your manager asking) and suggested to your manager ways to improve H&S performance? [MM12]
Manager	within the last month, has at least one of your people taken the initiative (without your asking) to suggest ways to improve H&S performance? [M10]

The four questions are corroboration of the self-reporting of people in the central core of the IRS. If part of the proper job of the JHSC and the OHS professional is to encourage communication, problem-solving and the proper flow of concerns through the system, then they should be sensitive to and aware of examples of success when it comes to reporting up.

CC&CM	can you provide several examples of workers going beyond just reporting H&S problems, that is, did they make positive suggestions for improvements in the work processes that would also improve H&S performance? [CC33]
OHSP	for the last year, can you provide several examples of workers going beyond just reporting H&S problems, that is, did they make positive suggestions for improvements in the work processes that would also improve H&S performance? [OH32]
CC&CM	can you provide several examples of supervisors going beyond just responding to reports by workers of H&S problems, that is, did they take initiative for improving work processes that would also improve H&S performance? [CC34]
OHSP	can you provide several examples of supervisors going beyond just responding to reports by workers of H&S problems, that is, did they take initiative for improving work processes that would also improve H&S performance? [OH33]

It is, of course, one thing to report up. It is quite another to get a proper response. Indeed, it is a downward spiral when responses do not come back in a timely fashion. People become discouraged, cynical and bitter when their reports disappear into a vacuum. It may be the case that a particular problem needs to be reported up several layers of the system because it is a "large problem". But even so, status reports are critical to maintaining people commitment to and enthusiasm about IRS processes.

Not only are prompt responses necessary, but appropriate ones as well. "Yeah, we hear you" is not an appropriate response. Neither is, "So fix it yourself or we'll get

someone else who can", where the reason the problem was moved up was because of insufficient authority or resources.

It is probably the case that asking about responses is redundant, since people would not continue to report upwards if, over time, there were not prompt and appropriate responses.

Answers to Question W10 gave a very good distribution across the mines and correlated significantly with OHS performance. The front-line supervisor responses gave a less definite pattern, and the senior supervisor responses had no correlation with OHS performance.

Worker	my supervisor responds promptly and appropriately to my suggestions on how to improve work processes [W10]
FL Supv	my supervisor responds promptly and appropriately to recommendations by me about how to improve H&S in the work processes [FLS13]
Mid Mgr	my manager responds promptly and appropriately to recommendations by me about how to improve work processes [MM13]

The following two questions asked of more senior people are specific to the IRS as opposed to OHS problems in general. This is in part because it should be such "system" type issues that move to the more senior levels.

Manager	I respond promptly and appropriately to reports by the middle managers regarding the "IRS" [M12]
Mid Mgr	I respond promptly and appropriately to reports by the supervisors regarding the "IRS" [MM14]

Once again we saw a pattern of uniformly positive responses that stretched across mines with little tracking of OHS performance.

The following two questions should probably be re-grouped with the Planning Cluster. The questions are not really about taking initiative in the way we have meant. Instead, they refer to the vitally important question of whether "thinking" and "doing" are linked together in the day to day operation.

These questions are not about all workers being involved in work planning on a day to day basis. Rather, they are about the involvement of experienced people in the formulating of company rules, procedures and so on. It is the legacy of "scientific management"—Taylorism—when detailed work procedures are drawn up and formalized

by people not involved intimately in the work. We could ask some corroborative questions of workers—"to your knowledge, are the company procedures, methods and standards put together with meaningful input from experienced workers?"

Mid Mgr	knowledgeable front-line supervisors and workers are involved in formulating company procedures, methods and standards to help keep the work safe [MM21]
Manager	knowledgeable front-line supervisors and workers are involved in formulating company procedures, methods and standards to help keep the work safe [M17]

4.7 THE "ACCOUNTABILITY" CLUSTER

The Accountability Cluster consisted of eight questions aimed at all levels of the direct line of responsibility except the workers.

FL Supv	I hold my people accountable, on a regular basis, for work I have delegated to them involving H&S [FLS5]
FL Supv	has your supervisor told you how frequently and in what manner you will have to account to him/her for the authority and responsibility for H&S that was delegated to you? [FLS4]
Mid Mgr	I hold my people accountable, on a regular basis, for delegated work involving H&S [MM5]
Mid Mgr	has your manager told you how frequently and in what manner you will have to account to him/her for the authority and responsibility for H&S that was delegated to you? [MM4]
Manager	I hold my people accountable, on a regular basis, for delegated work involving H&S [M4]
Manager	do you expect to be held accountable for the H&S performance of the mine by the Company officers [M3]
Director	does the Board hold the CEO accountable for the "IRS" [D20]
SEO	I expect to be held accountable for the H&S performance of the Company by the Board [SEO31]

Although one might have expected a strong correlation between OHS performance and the degree to which people in the IRS were formally held accountable for OHS activities, the answers to the this cluster, either taken singly or as a whole, did not track OHS performance.

There were no worker questions in this cluster, which would contribute to a poorer correlation. Being "held accountable" as a worker might be misinterpreted to

mean "discipline", which is not what we mean by accountability. Accountability is a periodic review of how a person has exercised authority and fulfilled responsibilities, as delegated by the person who is doing the review. There are many outcomes possible from such a review. It is also the case that there are many techniques for accountability, the classic managerial "performance review" is only one of them. We did not define "accountability" or refer to particular techniques of accountability. We left it open. Perhaps that left it too vague for people. General questions about "accountability" may be answered as all motherhood questions are answered. In retrospect, it would be hard to imagine a senior person stating that he or she is not held accountable, or that he or she does not hold others accountable. That would be like asking "do you do your job?" We will have to rethink how these kinds of questions can be asked. Perhaps the questions have to be directed to specific observable techniques of performance review. Even though "accountability" is a key concept in how the IRS should work, we may have to give up asking people to self assess accountability.

4.8 THE "DEMONSTRATING LEADERSHIP" CLUSTER

The Leadership Cluster had a lack of significant correlation with OHS performance. On its face, this runs counter to the accepted wisdom that OHS success depends on commitment from the top. Our view is that leadership at all levels is important, but it is up to the more senior people in particular to set the tone, establish the corporate culture and drive the IRS. We will have to enquire why the Leadership Cluster did not do a better job correlating with OHS performance. It should be noted that we will be delving into "leadership" in greater detail in Chapter 5, where we will be looking at leadership level by level within the central core of the IRS.

There were 39 questions in this cluster, but only two of these were directed to workers.

Worker	have you, within the last six months, personally witnessed your manager or superintendent showing leadership in improving H&S performance? [W26]
Worker	I am capable of identifying situations that cause illness or injury in my workplace [W12]

Worker Question W26, asking whether a worker had personally witnessed the manager or superintendent showing leadership in OHS was an excellent question. It resulted in a variation of response that generally tracked OHS performance of the mines. Overall, we suggest that more questions asking about leadership of others from the perspective of the

worker (and to some degree the front-line supervisors) will improve the correlation of this cluster with OHS performance. In Chapter 5, where we examine "leadership" more closely, we will be suggesting the inclusion of a number of new questions aimed at assessing whether workers had the authority, the confidence and the backing to engage in personal acts of "leadership" for safety.

Leadership is an elusive quality to define or describe, but in practice it is easy to sense whether it is present or not in an organization. There is an enormous literature on the subject, as witnessed by shelf space in any large bookstore. What we mean by leadership is the ability to motivate others to take action in the right direction. The leader has to have a vision of the future, must clarify values, principles and priorities, must communicate the vision in a way that motivates others, and must interact with people in a way that illustrates the values and principles that are key. Leadership in OHS, as in anything, means being proactive and not merely waiting for a crisis to emerge.

In the Leadership Cluster, there were only two questions out of 39 that were directed to workers (i.e., 5%) and one of those was not about workers' assessment of the leadership of others. This is the main reason for the lack of correlation, we believe. It is also the case that it is perhaps more difficult to ask questions about an abstract element like leadership. We will have to try harder to phrase questions of a more physical nature, without being too prescriptive in our specificity.

We did have problems with Board members and their "vision" for OHS. There is wide array of views on the proper role of Boards with respect to management. Board members have been known to declare that it is not their job to come up with a "broad vision" of anything. The senior officer of the company, it is said, is the one who presents a vision to the Board for approval. Without splitting too many hairs, however, it is hard to see how a Board can approve a vision if it hasn't already got a vision—however broad. A narrow understanding of directors' liability for OHS might mean "regulatory compliance". But even for OHS a Board's role is surely more than ensuring regulatory compliance. A proper understanding of corporate governance, we believe, is for the Board to be clear on its values, principles and vision. Without such a framework, how else can a Board provide guidance and advice? How can a Board choose a new CEO without a vision to set the criteria? These considerations underlie the following four questions.

SEO	during the last year, has the Board adopted a broad vision for H&S performance and communicated it to senior management? [SEO4]
Director	during the last year, has the Board adopted a broad vision for H&S performance and communicated it to senior management? [D4]
CC&CM	during the last year, has the Board stated their broad vision for H&S performance to senior management? [CC5]
OHSP	during the last year, has the Board stated their broad vision for H&S performance to senior management? [OH5]

Questions CC5 and OH5 above are corroborative questions and answers to CC5 was significantly correlated with OHS performance. Any broad vision that was more than window dressing should be readily transparent to the "internal auditors", the JHSC members and the OHS professional.

Is the broad vision just hot air? A vision has to be implemented—concrete steps identified, a time table set out, measurables listed, and so on. Is there a plan to implement the vision? If "yes", we have to ask ourselves what kind of plan is being referred to?—there are plans and then there are plans.

SEO	if the answer to the question above [has the Board adopted a broad vision for H&S performance?] is "Yes", do you feel that the Board's vision has been incorporated into the Company's operating plan? [SEO5]
Manager	are you implementing a plan to improve the mine's H&S performance? [M30]
SEO	have you approved, or do you know of, a plan to improve H&S performance within the Company? [SEO3]
Director	is there a plan to improve H&S performance within the Company? [D3]
CC&CM	is there, as far as you know, a plan to improve H&S performance within the Company? [CC3]
OHSP	is there, as far as you know, a plan to improve H&S performance within the Company? [OH3]

We can expect that senior people would be loathe to admit that there was no plan. Since we weren't specific about the nature of such "plans", it is likely senior people would be enthusiastic as to what counts as a plan. We would then get similar answers across organizations regardless of OHS performance. These questions are of the type that must be tightened to be meaningful. For the internal auditors (JHSC and OHS professional), we might rephrase the question to ask if they see signs of a "state-of-the-art plan", or a plan that they believe will lead to world class performance, or similar wording.

The weakness with the following two questions is that we left it open-ended as to what might count as examples of OHS leadership.

SEO	within the last year, have you shown the Board (CEO) specific examples of your H&S leadership? [SEO20]
Director	the CEO has shown the Board specific examples of the CEO's H&S leadership within the last year [D18]

The inevitable tendency of people striving to look good is to throw every thought, word and deed regarding OHS into the leadership hopper. We can be sure that many people would interpret leadership to include administrative actions that wouldn't necessarily be transparent to others lower down in the organization. We were looking for leadership actions of the kind that motivate and inspire the troops. These actions involve being present, being visible, speaking to groups of workers, asking questions of workers that shows interest, commitment and clarity of values and principles, participating in activities that show the relative high status of OHS, and so on. It is not true that all leadership actions have to be aimed directly at workers. Senior people must also be inspiring supervisors and mid-level managers. The latter have their own meetings and training sessions. These are opportunities for senior people to engage in the motivational aspects of leadership.

Because leadership is such an elusive quality, we asked some questions that might be used as signs that senior people are exercising leadership. We would expect that a committed senior manager, company officer or director would put OHS on the table at (almost) every formal meeting of managers or executives.

Manager	is H&S an agenda item at every meeting with the middle managers? [M20]
Manager	is H&S an agenda item at every meeting that you have with the Company officers? [M35]
SEO	is H&S an agenda item at every Executive meeting? [SEO17]
SEO	is H&S an agenda item at every Board meeting? [SEO16]
Director	is H&S an agenda item at every Board Meeting? [D15]

To some degree, these questions are more suitable for the Accountability Cluster, because one of the ways to raise the expectation that people will be held accountable is to have OHS as an agenda item on a regular basis. Accountability should be inevitable with such frequent reviews.

A caveat is in order, however. There are many kinds of meetings, and there are variations in the ways that Boards and executives organize themselves. We wouldn't expect to have OHS on the agenda of all sub-committees of the Board or of the Executive Committee. If the Board had a very active sub-committee with an OHS mandate, that might be more impressive than a Board without, but which did have OHS on the agenda of every full Board meeting. It must be said, however, that sticking OHS as an afterthought on the mandate of what is really a committee aimed at environmental protection, or "sustainable development", might simply obscure the relative priority of OHS.

Part of what it means to be a leader at the top end of the organization is to identify key values, to show what is important and to point in a direction people should be moving towards. The Annual Report is one opportunity for senior people to indicate what their beliefs are regarding OHS. The following two questions can be answered without asking the senior people, and indeed, it has been illustrative to examine some of the Annual Reports of the companies visited in this study (see Appendix 5, for an analysis of the OHS content of the Annual Reports of the companies represented by the six mines in the trial audit). The two following questions could well be dropped in future iterations of the audit.

SEO	has the H&S performance of the Company been one of the items that has been addressed in every one of the last five Annual reports? [SEO18]
Director	has the H&S performance of the Company been one of the items that has been addressed in every one of the last five Annual reports? [D16]

The following group of six questions ask about physical actions that supervisors and managers can engage in to show their interest and enthusiasm.

Mid Mgr	I attend crew safety meetings [MM24]
Mid Mgr	when I am in the mine I always make a point of talking about H&S with the workers and supervisors [MM28]
Manager	when I am in the mine I always make a point of talking about H&S with the workers and supervisors [M23]
FL Supv	on most days, do you stop and watch critical parts of the work being done? [FLS37]
Mid Mgr	when I am in the workplace I stop and watch critical parts of the work being done [MM36]
FL Supv	when my people have difficulty using protective devices or equipment, I try to eliminate the obstacles [FLS40]

Perhaps we should ask more of these kinds of questions. The difficulty is that the more specific we are in such questions, the more we would cut off responses about practices we haven't thought of. Motivated people are ingenious when it comes to applying principles and we can't presume to anticipate the outcomes of ingenuity.

The following are corroborative questions intended to check whether the leadership initiatives of managers are actually affecting the workplace—from the perspective of workers, supervisors and the "internal auditors".

Worker	have you, within the last six months, personally witnessed your manager or superintendent showing leadership in improving H&S performance? [W26]
FL Supv	within the last six months, have you personally witnessed your manager or superintendent showing leadership in improving H&S performance? [FLS29]
CC&CM	I have seen specific examples of the Manager's H&S leadership within the last year [CC14]
OHSP	I have seen specific examples of the Manager's H&S leadership within the last year [OH14]

Again, we have left the nature of the leadership activities open-ended and undefined. We may want to be more specific. We would expect that these questions would be critical. Question W26 is in fact the only direct question about the leadership of senior people aimed at the workers.

There is an overlap between "taking initiative" and "leadership". We have a cluster of questions directed at whether people are going beyond reacting to problems and are taking initiative to improve processes. The following two questions might well be better placed in the "Initiative Cluster".

CC&CM	can you provide several examples of the Manager going beyond just responding to reports of H&S problems by the workers, supervisors or JHSC, that is, did he/she take initiative for improving the work processes that would also improve H&S performance [CC35]
OHSP	for the last year, can you provide several examples of the Manager going beyond just responding to reports of H&S problems by the workers, supervisors or JHSC, that is, did he/she take initiative for improving the work processes that would also improve health and safety performance [OH34]

You would expect people exercising leadership on OHS in an organization to have a clear idea of where the organization stands with respect to its peers, and this was the thinking behind the following group of questions:

Manager	I know the H&S performance of the mine, and how it compares with other companies in the industry [M29]
SEO	I know the H&S performance of each mine or plant, and how it compares with other companies in the industry [SEO2]
Director	I know the H&S performance of the Company, and how it compares with other companies in the industry [D2]
CC&CM	I know the H&S performance of the Company, and how it compares with other companies in the industry [CC2]
OHSP	I know the H&S performance of the Company, and how it compares with other companies in the industry [OH2]

We do realize, however, that OHS statistics are notoriously hard to get in a consistent, reliable format. We didn't double check this knowledge, or see just how detailed respondents thought we meant the knowledge to be. The answers to these questions are good "symptoms" of some other desirable attributes of the respondents; it is a rough measure of the degree of involvement a person has with OHS.

The questions below might be seen as a little off track. They are there because we are interested in leadership at all levels.

Worker	I am capable of identifying situations that cause illness or injury in my workplace [W12]
FL Supv	I am capable of identifying high-risk situations [FLS16]
Mid Mgr	I am capable of identifying events that increase risk, such as unusual and high energy activities [MM19]

We would expect that the best performers would have a culture that encourages individuals at even the lowest levels to take initiative—the kind of initiative that can motivate others to action. However, in retrospect, these questions might be better classified as in either the Initiative Cluster or the Information Cluster.

4.9 THE "IRS ISSUES & RESPONSES" CLUSTER

The IRS Issues and Responses cluster did not show a significant correlation with OHS performance. This was the biggest cluster of questions—45 in total. Only two of those questions were directed to workers (i.e., 4% of the questions). This is likely the primary explanation for the poor correlation.

One of the difficulties with this large cluster may have been our use of the phrase:

> *"the Company-wide system of responsibility for individual and co-operative action to take care of health and safety issues"*

to describe the IRS. Many respondents could have confused the statement with the OHS management system in general or OHS efforts in general.

There were several sub-themes in this cluster, which, given its size, should be broken out into separate clusters. For discussion purposes, we have regrouped the questions into some of these sub-themes, e.g.:

- reporting up the responsibility chain regarding IRS performance
- responding to such reports
- the role of the JHSC and worker representative regarding the IRS
- the role of the OHS professional regarding the IRS
- the use of "IRS analysis"
- the existence of a "truncated" version of the IRS

The following subset of questions is concerned only with the reporting up of "IRS issues" within the organization (note that *none* was directed to workers):

Manager	have you taken issues regarding the performance of the "IRS" to the Company officers for consideration or decision? [M9]
SEO	within the last year, has the VP (Mine Manager) brought issues regarding the performance of the "IRS" to the Executive for consideration or decision? [SEO9]
Director	within the last year, has the CEO brought issues regarding the performance of the "IRS" to the Board for consideration or decision? [D8]

We wish to emphasize that this is not the same as the set of questions about the reporting up of OHS concerns, nor is it the same as taking initiatives about OHS upwards. The concerns here have to be about the IRS itself. Thus, it is immediately problematic if there is a lack of clarity about the IRS. The questions can suffer from being too conceptual. It is likely that many respondents believed that the IRS and OHS generally were synonymous, and so responded positively even though the IRS was not expressly identified as a subject.

We shouldn't be too quick to dispose of these questions, however. Perhaps in the future people will have a clearer notion of what sorts of things are suggested by the

phrase "performance of the 'IRS'". Certainly we would expect over time that the IRS would become an identifiable subject of concern to senior management that is separate from OHS generally. We will be expecting senior people to be explicitly driving the IRS.

As always, it is one thing to report upwards, it is another thing to get an appropriate response. The connection between the two, over time, is that poor response will ultimately result in a lack of reporting up. It may seem to be stating the obvious, but a finding of poor reporting is likely a symptom of an earlier problem with the handling of concerns.

Manager	the Company officers respond promptly and appropriately to reports by me regarding the "IRS" [M13]
SEO	within the last year, I have responded promptly and appropriately to reports by the VP (Mine Managers) regarding the "IRS" [SEO11]
Director	the Board responds promptly and appropriately to issues brought by the CEO to the Board regarding the "IRS" [D10]
Manager	I respond promptly and appropriately to reports regarding the "IRS" [M34]

Again, as above, this set of questions is about response to reports about the IRS, not about traditional safety concerns.

The following questions are about the role of the worker representative and the JHSC:

CC&CM	within the last year, has the JHSC audited, or arranged for the audit, of the "IRS" ? [CC25]
CC&CM	within the last year, has the JHSC reviewed the establishment and performance of the "IRS" with the Company President? [CC7]
SEO	within the last year, has the Executive received reports from the JHSC or the worker members about the status of the "IRS"? [SEO12]
CC&CM	within the last year, has the JHSC been asked to provide evidence to the Company President about the performance of the "IRS"? [CC8]
Director	within the last year, has the Board received reports from the JHSC or the worker members about the status of the "IRS"? [D12]
CC&CM	within the last year, has the Board of Directors received reports from the JHSC about the status of the "IRS"? [CC10]
OHSP	within the last year, has the Board of Directors received reports from the JHSC about the status of the "IRS"? [OH10]

Manager	in the last year, have you received reports from the JHSC or the worker members about the status of the "IRS"? [M33]

An active internal auditor will be taking problems to the appropriate level in the organization. Given that individuals in the organization have a need to show personal due diligence, and that an individual's due diligence status shifts with knowledge, the indirect power of the internal auditors will consist largely of the ability to change individuals' knowledge of the OHS situation. This works best when everyone in the organization understands what is going on.

In the questions above, we are not referring to OHS problems generally, but to the status of the IRS. It may well be that currently even the best performers are not used to expressly referring to the IRS as a subject separate from OHS performance generally. As this understanding improves, we would expect these questions to give a better correlation with OHS performance down the road.

One problem we will have to address is the situation where the IRS is working so well, that the JHSC is not busy. In that case, an inactive JHSC or worker representative would have a bad effect on the on the audit "score" for these questions, when really the opposite situation is in effect. We will have to have some way of reversing the value of the questions when there are independent signs that the central core of the IRS is functioning excellently.

As corroboration, we must also ask whether there is an appropriate and timely response from recipients of information from the JHSC or the worker representative.

SEO	the Executive responds promptly and appropriately to reports by [the JHSC or the worker rep] regarding the "IRS" [SEO13]
Director	the Board responds promptly and appropriately to reports by [the JHSC or the worker rep] regarding the "IRS" [D13]
CC&CM	the Board responds promptly and appropriately to reports by the JHSC regarding the "IRS" [CC11]
OHSP	the Board responds promptly and appropriately to reports by the JHSC regarding the "IRS" [OH11]

The responses to these group of questions were illuminating and contradictory—the Executive and the Board representatives gave predominantly positive responses, whilst the responses from the JHSC and OHS professionals were more varied and generally negative. For a given mine, such a discrepancy reveals a problem within the IRS.

The following questions are a sub-theme involving the role of the OHS professional.

OHSP	within the last year, have you reviewed the establishment and performance of the "IRS" with the Company President? [OH7]
OHSP	within the last year, have you been asked to provide evidence to the Company President about the performance of the "IRS"? [OH8]
Manager	in the last year, have you received reports from the H&S Coordinator about the status of the "IRS"? [M32]
OHSP	within the last year, have you audited, or arranged for the audit, of the "IRS" ? [OH25]
CC&CM	the H&S Coordinator regularly provided advice to the JHSC on issues regarding the "IRS" [CC27]
OHSP	do you regularly provide advice to the JHSC on issues regarding the "IRS"? [OH27]
OHSP	in the last year, have you spoken with people at every level of the Company about the nature and functioning of the "IRS" in general? [OH24]

Currently, the OHS professional may not be called upon to do an IRS audit (separate from an OHS system audit), or counsel senior management explicitly about the IRS, but we would expect these questions to have more relevance over time, as the IRS does become a day-to-day concept. In principle, once the IRS is properly understood, it dictates what the role of the OHS professional should be. The latter should be capable of giving good advice to all workplace parties on how to best optimize the IRS.

The CC27 and OH27 question couplet should tell us whether the OHS professional is making the IRS a theme in dealings with the JHSC. Of course, the question is begged as to the actual relationship between the OHS professional and the JHSC. The status of the OHS professional varies considerably between organizations. The OHS professional might be a management representative on the Committee, or might be excluded from the "inner circle" of the JHSC entirely. How is the OHS professional viewed in the organization? An independent source of advice, or just another management staff person? Nevertheless, the *a priori* notion that the proper role of the OHS professional should be to, 1) champion the IRS concept, 2) educate the organization regarding the IRS, and 3) conduct activities inspired by the IRS, remains sound.

The following questions are concerned with what we call "IRS Analysis", the use of the IRS model to go behind the superficial OHS problem and find the source of the problem in a failure or weakness in the IRS.

CC&CM	overall, I think that, when worker members of the JHSC engage in their functions, they focus on the underlying issues regarding the performance of the "IRS". They do more than just deal with the immediate concerns of unsafe acts and conditions. [CC26]
OHSP	overall, I think that, when worker members of the JHSC engage in their functions, they focus on the underlying issues regarding the performance of the "IRS". They do more than just deal with the immediate concerns of unsafe acts and conditions. [OH26]
CM	when I discuss a H&S problem with a worker I always try to find out why the worker was unable to deal with the problem alone [CM36]
CM	when I discuss a H&S problem with a worker I always try to find out why the worker was unable to solve with the problem in cooperation with his or her supervisor [CM37]
CM	when I receive a report or complaint about a H&S problem, I believe that one of my aims is to determine why and how the "IRS" failed [CM38]
CM	when I receive a report or complaint about a H&S problem from a worker or a committee member, I always discuss the problem with a higher level of management when I do not get an adequate answer at a lower level [CM40]
CM	when I receive a report or a complaint about a H&S problem, I always look to see if the cause is a weakness in the H&S management system. [CM39]
CM	when I do a workplace inspection, I am ultimately trying to determine, from the "symptoms" that I observe, whether the "IRS" is working well [CM43]
CC&CM	in the last year, as a member of the JHSC, have you spoken with people at every level of the Company about the nature and functioning of the "IRS" in general? [CC24]

These questions are essentially aimed at the worker representatives and the certified member. Do they handle OHS problems with the IRS in mind? If the IRS is indeed the pathway to better OHS performance, and if the role of such individuals is to be auditors of the IRS, it seems obvious that they should be engaged in IRS analysis as a matter of course.

Following along on the sub-theme of "IRS Analysis", we expect the managers to also be addressing OHS problems with root cause analysis being directed to the IRS.

Mid Mgr	when you visit one of your workplaces, do you look for symptoms of failure of the "IRS"? [MM29]
Manager	when you visit one of the workplaces, do you look for symptoms of failure of the "IRS"? [M24]
Manager	do you regularly review JHSC minutes to look for signs of failure of the "IRS"? [M41]

The manager should be reviewing the minutes of the JHSC because there are usually many signs visible in the minutes when the IRS is not working properly. These questions could do with some improvement. It is not certain, from the responses, that people really understood the connection between "symptoms" and underlying IRS causal factors. And, indeed, it might be argued that questions MM29 and M24 are not asking about IRS analysis so much as they are asking about the symptoms of IRS failure; which is not the same thing.

The following questions refer to a situation that is unhealthy within a properly functioning IRS—a situation where the worker goes to the worker representative ***first*** rather than raise the OHS issue with his or her supervisor.

Worker	when I go to my supervisor with a H&S concern, my supervisor refers me immediately to the worker member of the Committee or to the safety department. [W17]
FL Supv	when one of my people comes to me with a H&S problem, I refer them immediately to the worker member of the Committee or the safety department [FLS22]
Worker	I know of occasions in the last year, where someone from my workplace has taken a H&S concern to the worker H&S rep and not to the supervisor [W20]
FL Supv	within the last year, there have been times when one of my people has taken a H&S concern to someone else and not to me [FLS25]
CC&CM	it is my impression that workers usually take their H&S concerns directly to the worker H&S rep or Committee member, rather than to their supervisor [CC32]
OHSP	it is my impression that workers usually take their H&S concerns directly to the worker H&S rep or Committee member, rather than to their supervisor [OH31]

The central core of the IRS does not have a chance to work. Another way of looking at it is that the central core of the IRS had its chance but failed, and now the worker—out of frustration—is going to the built-in "back up mechanism" of the worker representative and the JHSC. In either case, the solution is to first ensure that the IRS is healthy—regalvanize the supervisor, and levels above the supervisor. Then re-encourage the workers to follow the usual path. The JHSC members should be attuned to redirecting

worker reports back into the IRS if the worker has not taken the matter initially to the supervisor.

The following question is out of place in the "Issues and Responses" cluster and should be grouped with the "Initiatives" cluster.

Manager	within the last year, have you taken the initiative (beyond responding to reports) to provide direction to the middle managers regarding the "IRS"? [M11]

From the discussion on the responses received to the "Issues and Responses" cluster, it is clear to us that it would be advisable to extract the questions having to do with the role of the OHS professional, the worker representative, the CM and the JHSC, and place them in a separate cluster. As "internal auditors", they are functionally distinct from the individuals with direct responsibility.

4.10 THE "RESPONSIBILITY" CLUSTER

This final cluster of four questions deals with responsibility at the worker/front-line supervisor interface:

Worker	whenever I discuss work with my supervisor his or her expectations of me for my H&S performance are made clear [W18]
FL Supv	when I assign work, I am clear in my instructions about the need to do it safely [FLS23]
FL Supv	do you clearly understand who you are responsible for as a supervisor [FLS35]
FL Supv	do you clearly understand the boundaries of the physical area that you are in charge of? [FLS36]

Questions FLS35 and FLS36 are present due to the broad definition of supervisor under the legislation and the fact that there can be liability for workers who are not employees. Although these two questions have a due diligence connotation about them, they nevertheless do address problems within the IRS that may arise in many workplaces. Perhaps the mining sector is one where these issues tend to be clear. In many industrial workplaces, however, it has been our experience that the two questions are often not well answered by front-line supervisors.

This cluster was disappointing in an ironic way. Who would have thought that the *Responsibility* Cluster concerning the Internal *Responsibility* System would show a lack of significant correlation with OHS performance? All we can say is that there were few questions involved in this cluster and so it had little scope and impact. Further, virtually

all front-line supervisors strongly agreed with FLS35 and FLS36—there was no real variation among the different mines. We feel it would be better to move these questions into the Information Cluster. Alternatively, Questions W18 and FLS23 could go in the Planning Cluster.

5. ANALYSIS OF THE IRS AT ALL LEVELS OF THE ORGANIZATION

In Chapter 4 we discussed how to analyze the IRS in terms of concepts—is "planning" well done under the IRS?—is "information" flowing as it should under the IRS? An alternate way of examining the IRS is to determine how well the different *levels* of the organization and those with a contributive role are performing—e.g.: are supervisors, as a group, performing effectively? are the middle managers?

Analysis of the IRS level by level allows us to bundle together remedies for the weaknesses demonstrated by specific groups of people through the audit. For example, if supervisors are not performing well as a group, and we have dug down deep to see why, we will come up with a package of remedies aimed at supervisors, e.g.:

- training about specific actions
- clarification of authority, expectations and how performance will be reviewed
- incentives
- clearing away of administrative obstacles limiting good performance
- fixing other elements of the IRS that are undermining or hindering supervisor efforts

This "surgical approach" discourages unfocussed, expensive remedies that are hard to assess in terms of effectiveness.

Of course, an organization might also want to determine why a group is doing so well at a location. The organization can then use the group as an example for similar groups situated elsewhere in the organization.

5.1 INTRODUCTION

In this Chapter we are looking at two big questions for each group in the IRS. First, does the group understand the IRS?—we call this "Understanding". Second, is the group committed to doing what's necessary under the IRS?—we call this "Leadership". Leadership is not something that just the most senior people should be doing. In health and safety we talk about leadership at all levels.

We have regrouped the audit questions under these two big questions, with appropriate sets of questions for each group. We have checked the correlation between

"good" responses for each group against the OHS performance of the mine the group was from. We found that there were significant correlations between the audit questions and OHS performance for all but the middle manager and executive levels for the "Understanding" group. This means that we must make recommendations to improve the questions for these people.

For the "Leadership" questions, there was significant correlation between "good" answers and OHS performance for front-line supervisors and for middle managers only, but not for the other supervisory and management, nor for workers. Given that worker responses have been very good with respect to tracking OHS performance, it is initially a puzzle why a significant correlation was not found here. The answer is rather simple; there was only one question actually asked of workers in this cluster. We will make some suggestions for tightening up this group of questions so as to get a better correlation on a future iteration of the audit tool.

In this chapter we want to do several things:

- provide the rationale for adopting certain questions (those not already referred to in Chapter 4) in the audit—i.e., how we got from the model to the questions;
- show how the ultimate user of the audit tool might organize the questions into sub-groupings and analyze the results in a way that will suggest remedies or solutions—we shall organize the analysis by level in the organization; and
- suggest ways the audit tool could be improved so as to gain greater correlation between questionnaire answers and OHS performance.

We also provide an evaluation of questionnaire responses received from MOL inspectors as counterpoint, as it were, to responses from within the individual mines and their corporate organizations. Finally, we give a brief account of the response of the two contractors that were surveyed in connection with two or our mine visits.

5.2 UNDERSTANDING OF THE INTERNAL RESPONSIBILITY SYSTEM

Our purpose here is to provide some rationale for certain questions and to make suggestions how the group of questions, and sub-groups within it, might be modified. We will go through the hierarchical structure of the central core of the IRS, tier by tier.

5.2.1 Workers' Understanding of the IRS

There were eight questions that comprised the cluster of questions that dealt with the understanding workers had of the IRS. Four of these were questions asked of the workers themselves, and four asked other levels of the IRS for their assessment of the workers' understanding. There was a good correlation between workers' understanding of the IRS (as measured by this eight question cluster) and whether the mine was a good OHS performer. The mines with the best accident records had workers who appeared to understand the IRS.

Worker	IRS Multiple Choice Question (13 parts) [W1]
Worker	I understand "IRS" and can describe it [W27]
Worker	Believes direct responsibility for H&S rests with direct chain of command [W29]
Worker	Believes responsibility for H&S rests with JHSC & worker members [W13]

Of the four questions answered by workers (shown above), Question W1 is the big multiple choice question (1a) comprising 13 sub-questions about the IRS.[25]

1A. In the following list put a check mark against **every** statement that applies

"I believe that the Internal Responsibility System (IRS) **should be** where:

a everyone (from the rockface to the Boardroom) looks after health and safety as part of doing their job;

b the workers are the only ones to look after their own and co-worker safety;

c the supervisors and managers co-operate with the workers to head off and solve problems;

d we all work together to make things better by reducing or eliminating the health and safety risks;

e the Health and Safety Committee is directly responsible to make the workplace safe;

f the Company President has some responsibility for the worker's health and safety;

g the supervisor only makes sure the workers follow the rules and procedures;

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25 Everyone in the chain of responsibility and in contributory roles answered this ***same*** question. Furthermore, from our discussions in Chapter 3, it was the combination of this question and the second question (1b)—which asked respondents whether they thought that, in light of their own answer to Question 1a, the IRS was working effectively in their workplace—that gave us such a high level of correlation with the OHS performance of the mine.

h	if the worker cannot fix the problem, the supervisor will help find the answer;
i	if the worker cannot fix the problem, the only way out is to refuse to work;
j	the Health and Safety Coordinator finds the problems and tells the workers to fix them;
k	the Health and Safety Committee are resources;
l	the Health and Safety Committee help resolve issues when other ways fail;
m	we go beyond fixing problems and try to improve the health and safety in the work processes."

This big multiple choice question, W1, essentially makes the three other questions asked of workers redundant. Furthermore, none of these three correlated with OHS performance. We would suggest, therefore, that Questions W27, W29 and W13 be dropped.

The other four questions (shown below) are corroborative. We included them in the pilot study (two mines), before we introduced Question W1. However, when it is realized that Question W1a, when taken by itself, is only moderately correlated with OHS performance, whereas the eight-question cluster showed good correlation, these questions probably have a part to play. Two of the four (FLS32 and OH28), taken by themselves, correlated strongly with OHS performance, but the other two did not.

FLS	I think my workers understand "IRS" [FLS32]
Mid Mgr	I think the workers understand "IRS" [MM33]
CC&CM	believe workers understand "IRS" & roles of participants [CC28]
OHSP	believe workers understand "IRS" & roles of participants [OH28]

5.2.2 Front-line Supervisors' Understanding of the IRS

The equivalent questions for front-line supervisors are found in the two blocks of questions below; four were asked of the front-line supervisors themselves:

FLS	multiple Choice Question (13 parts) [FLS1]
FLS	understand "IRS" and can describe it [FLS30]
FLS	believe direct responsibility for H&S rests with direct chain of command [FLS33]
FLS	believe responsibility for H&S rests with JHSC & worker members [FLS17]

There was very good correlation between the answers to this group of front-line supervisor questions and OHS performance.

As we did for the worker questions, we can pare away some of the redundancy in a further iteration of the audit tool. If Questions FLS33, FLS30 and FLS17 are removed (as they are essentially made redundant by the multiple-choice question, FLS1), a significant correlation from the cluster is still seen. Because the front-line supervisor's answers to the multiple choice question, taken on their own, did not correlate significantly with OHS performance, the two corroborative questions below obviously have a role to play and hence should be retained.

Worker	thinks FLS understands IRS [W21]
Mid Mgr	think the FLS understand "IRS" [MM32]

5.2.3 Middle Managers' Understanding of the IRS

The middle manager question cluster (seven questions in all) did not show correlation with OHS performance. There was only one corroborative question, FLS31. We are cautious about suggesting any redundancy here, since there was no correlation. Rather, further thought should be given to adding more questions that can contribute to correlation.

Mid Mgr	IRS Multiple Choice Question (13 parts) [MM1]
Mid Mgr	understand "IRS" and can describe it [MM30]
Mid Mgr	understand role of the supervisor in "IRS", and can describe it [MM31]
Mid Mgr	believe direct responsibility for H&S rests with direct chain of command [MM34]
Mid Mgr	believe responsibility for H&S rests with supervisors and workers [MM17]
Mid Mgr	believe responsibility for H&S rests with JHSC & worker members [MM20]
FLS	thinks his MM understands IRS [FLS31]

5.2.4 Mine Managers' Understanding of the IRS

The questions regarding mine managers' understanding of the IRS (a cluster of eight questions) showed some correlation with OHS performance. Six of the questions were asked of the mine managers themselves:

Manager	IRS Multiple Choice Question (13 parts) [M1]
Manager	understands "IRS" and can describe it [M25]
Manager	understands his role in "IRS", and can describe it [M26]
Manager	believes direct responsibility for H&S rests with direct chain of command [M27]
Manager	believes responsibility for H&S rests with JHSC & worker members [M16]
Manager	my actions or non-actions can cause accidents [M40]

Our comments about redundancy in light of the multiple choice question apply here also. Questions M25, M27 and M16 can be dropped, and if they are, significant correlation with OHS performance remains for the *whole* cluster.

Question M40 was not asked of the lower levels of the organization. We can assume that people close to the work will understand that their actions and inactions can lead to accidents. Our experience tells us, however, that not all senior people appreciate what modern accident theory is telling us; that the root causes of accidents can emanate from the highest levels of the organization. We want to be sure that senior people understand that not doing what a good executive should be doing for OHS will increase risk to workers. This question should stay in any revision. It has an educational value regardless of correlation.

The two corroborative questions in the Managers' cluster were posed to the "internal auditors". Again, since we are checking directly through Question M1 the managers' understanding of the IRS, these two questions may be redundant. But note that the questions are aimed at corroboration of "all levels of management", which is a larger group than the Managers group above. Hence, we suggest that the following two questions remain.

CC&CM	believe all levels of management understand "IRS" and roles of participants [CC29]
OHSP	believe all levels of management understand "IRS" and roles of participants [OH29]

5.2.5 Senior Executive Officers' Understanding of the IRS

There were six questions in this cluster, and all were asked of the senior executives (there were no questions asked of others in the IRS about their impression of the understanding senior executives had of the IRS). At this highest level of management

we did not find correlation between the answers given (either considered as a whole, or as individual answers) and OHS performance. So, a good score or a bad score doesn't tell us anything since neither are connected to OHS performance. We tended to get the same good answers regardless of whether the mine in question had a good or bad track record on accidents. However, this does not *necessarily* mean the questions need to be changed.

SEO	IRS Multiple Choice Question (13 parts) [SEO1]
SEO	understands "IRS" and can describe it [SEO29]
SEO	understands his role in "IRS", and can describe it [SEO30]
SEO	believes direct responsibility for H&S rests with direct chain of command [SEO33]
SEO	believes JHSC is prime vehicle for H&S performance [SEO22]
SEO	my actions or non-actions can cause accidents [SEO32]

Our options are to eliminate these questions, change them or ask others in the organization more questions about senior management's understanding of the IRS (or some combination). Questions SEO1, SEO32 and probably SEO30 should remain, regardless of other changes. Questions SEO29, SEO33 and SEO22 should be dropped because of redundancy with the multiple-choice question. Concerning senior executive officers, it is probably appropriate to ask corroborative questions of the JHSC members—for example:

CC&CM—believes the SEO understands the IRS as an idea separate from OHS in general

CC&CM—believes the SEO is personally committed to making the IRS work effectively (not just committed to OHS generally)

CC&CM—has seen the SEO take action to stimulate the IRS (not just make improvements to OHS generally)

5.2.6 Directors' Understanding of the IRS

There were seven questions in this cluster, and all were asked of the Directors (there were no questions asked of others in the IRS about their impression of the understanding Directors had of the IRS).

Director	IRS Multiple Choice Question (13 parts) [D1]
Director	understands "IRS" and can describe it [D25]
Director	understands his role in "IRS", and can describe it [D26]

Director	believes direct responsibility for H&S rests with direct chain of command [D28]
Director	believes responsibility for H&S rests with supervisors and workers [D11]
Director	believes JHSC is prime vehicle for H&S performance [D19]
Director	my actions or non-actions can cause accidents [D27]

For two of the six mines, we were unable to include Directors in the survey. And there was no correlation between answers to the cluster and OHS performance of the remaining four mines. Questions D25, D28, D11 and D19 should be dropped, as they are made redundant by the multiple-choice question.

We could ask several questions of the JHSC members, similar to the questions we have suggested be added for the senior executives, about Directors' understanding of the IRS. It is, however, less likely that JHSC members would have an opportunity to gain a sense of the Directors' understanding, so the suggestion may not be very practical.

5.2.7 Committee Co-chairs & Certified Members Understanding

The cluster for JHSC members comprised 12 questions (presented in two blocks below), all but two of which were asked of Committee co-chairs and certified members themselves. There was moderate correlation between the answers from this cluster, considered as a whole, and OHS performance.

CC&CM	IRS Multiple Choice Question (13 parts) [CC1]
CC&CM	understand "IRS" and can describe it [CC21]
CC&CM	understands committee and member role in "IRS", and can describe it [CC22]
CC&CM	believe all members of committee understand "IRS" and role of participants [CC30]
CC&CM	believe H&S should be left to labour and management to work out in the workplace. [CC23]
CC&CM	believe Committee is the main vehicle for H&S performance in the Company [CC15]
CC&CM	believe they are directly responsible for ensuring hazards are identified and dealt with [CC4]
CC&CM	believe committee is relied on as the main vehicle for H&S performance [CC16]
CC&CM	believe committee is an Internal Auditor of "IRS" [CC17]
CC&CM	believe OHS Prof is an Internal Auditor of "IRS" [CC18]

Because of the scope of the multi-choice question, some of the other questions about understanding the IRS could be eliminated, as they are redundant. Questions CC21 and CC16, for example, could be dropped. However, because of their educative function, we recommend keeping the "internal auditor" questions (CC17 and CC18). Question CC30 can be used to assess the health of the JHSC. Provided that a respondent answered Question CC1a well—i.e., they really *did* understand the IRS—then we should pay close attention to such a person's assessment of whether others on the JHSC have a good understanding.

Questions OH30 and W32 are corroborative questions for JHSC understanding. Question OH30 may be redundant. Question W32 should remain because it is also part of the sub-cluster of questions discussed in Chapter 4 that, in total, gives us some idea whether, and to what extent, respondents view the IRS as consisting of little more than the worker, and the worker representative (a "truncated" view of the IRS), rather than the worker all the way up to the boardroom.

OHSP	believes all members of committee understand "IRS" and role of participants [OH30]
Worker	workers say that worker members of the committee tell them to take concerns to them rather than supervisor [W32]

5.2.8 OHS Professional's Understanding of the IRS

There was no significant correlation for the OHS professionals. Perhaps OHS professionals have a pretty good idea of what the right answers should be, regardless of the mine they work for. OHS professionals are few in number and they do not normally have direct authority over others regarding OHS. Their understanding of the IRS could only have an impact on a mine's OHS performance if they have influence on the mine manager's and the supervisory personnel's understanding of the IRS.

OHSP	IRS Multiple Choice Question (13 parts) [OH1]
OHSP	understands "IRS" and can describe it [OH22]
OHSP	understands his role in "IRS", and can describe it [OH23]
OHSP	believe Committee is the main vehicle for H&S performance in the Company [OH15]
OHSP	believes he is directly responsible for ensuring hazards are identified and dealt with [OH4]
OHSP	believe committee is relied on as the main vehicle for H&S performance [OH16]

OHSP	believe committee is an Internal Auditor of "IRS" [OH17]
OHSP	believe OHS Prof is an Internal Auditor of "IRS" [OH18]

Question CC31 is the only corroborative question.

CC&CM	believe H&S Prof understands "IRS" and role of participants [CC31]

To improve the performance of the OHS professional cluster, we would recommend asking workers and front-line supervisors for their assessment of the OHS professional's understanding of the IRS—for example:

W or FLS	believes the OHS professional understands the IRS as an idea separate from OHS in general
W or FLS	believes the OHS professional is personally committed to making the IRS work effectively (not just committed to OHS generally)
W or FLS	has seen the OHS professional take action to stimulate the IRS (not just make improvements to OHS generally)

Given the lack of direct authority, however, we cannot be too confident that the correlation would improve.

5.3 LEADERSHIP (COMMITMENT)

Answers from the leadership question clusters only showed good correlation with OHS performance for front-line supervisors, and not for anyone else. The workers did not show correlation, likely because there were few questions actually posed to workers about their commitment.

5.3.1 Corporate Commitment

The "corporate commitment" cluster (which contained 56 questions in total) consisted of questions for both executives and Directors, *and* questions about executives and Directors asked of other members of the IRS. There was no significant correlation between responses to the cluster, taken as a whole, and OHS performance of the mine. Part of this lack of correlation *may* have been due to the fact that there was considerable homogeneity in the responses from the corporate respondents, irrespective of the mine

they were responding about. We must also be cautious with our comments here as there was not a complete suite of *corporate* respondents across the six mines.[26]

Many of the questions in this cluster are also included in the other. For example, in Chapter 4 we examined "leadership" among the performance factors. Questions D4 and SEO4 are examples of questions that show twice. Therefore some of our comments about the clarity, suitability, and so on of specific questions can be found in Chapter 4.

Director	in the last year has the Board adopted a broad vision for H&S performance communicated it to senior management? [D4]
SEO	in the last year has the Board adopted a broad vision for H&S performance and communicated it to senior management. [SEO4]
Director	knowledge of mention of "IRS" in Board's H&S vision [D5]
CC&CM	in the last year has the Board stated a broad vision for H&S performance to senior management. [CC5]
OHSP	in the last year has the Board stated a broad vision for H&S performance to senior management. [OH5]
CC&CM	knowledge of mention of "IRS" in Board's H&S vision [CC6]
OHSP	knowledge of mention of "IRS" in Board's H&S vision [OH6]

Part of our purpose here is to add some insight as to why certain questions were chosen. We asked a number of questions below regarding the company's OHS policy. In Ontario, most organizations of any size are legally required to have and to post an occupational health and safety policy. Unfortunately, people often view such requirements as something to be dealt with *pro forma*. Policy statements should be the place where the values, principles and priorities of the most senior people are clearly spelled out. The rest of the management system should be the means by which these ideas are brought to life. The policy statement should be the starting point for planning, training, and other activities. You hope to find everyone in an organization capable of identifying, articulating and applying the ideas in an ongoing, creative process.

There are two very different ideas expressed in the group of seven questions below: 1) is the IRS clearly stated in the policy? and 2) does a particular person understand what's in the policy? When we asked people whether the policy referred to

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26 Our plan for the trial audit was to have two respondents at the senior executive level (e.g., company President, senior vice-presidents) and one respondent from the company's Board of Directors who was *not* also a respondent at the senior executive level.

the IRS principle of everyone being individually ***and*** cooperatively engaged in OHS, we had people saying "yes", even when our reading of the particular mine's policy resulted in our concluding that it does not. One can see that, in the future, if IRS analysis and auditing becomes common, we will see the IRS in policy statements as a matter of course. It is really only a temporary sign as to whether IRS ideas are alive and well.

Worker	does the Corporate H&S Policy refer to everyone trying to improve H&S? [W30]
FLS	does the Corporate H&S Policy refer to everyone trying to improve H&S? [FLS34]
Mid Mgr	does the Corporate H&S Policy refer to everyone trying to improve H&S? [MM35]
Manager	does the Corporate H&S Policy refer to everyone trying to improve H&S? [M28]
SEO	does the Corporate H&S Policy refer to everyone trying to improve H&S? [SEO27]
Director	does the Corporate H&S Policy refer to everyone trying to improve H&S? [D23]
OHSP	reference to "IRS" in job description of OHS Prof [OH35]

Questions D14 and SEO14, in the group of 10 questions presented below, were not asked elsewhere. As we discussed in Chapter 4, there is some controversy generally about how active Boards should be in making suggestions to executives. One would think that if there is anything that is principled enough to be coming from the wise, prudent Board, it would be insight into broad philosophical approaches to OHS such as represented by the IRS. The other eight questions were asked in the performance factor cluster already dealt with in Chapter 4.

Director	Board has provided "IRS" suggestions to CEO [D14]
CEO	Board has provided "IRS" suggestions to CEO [SEO14]
Director	Board responds promptly ... to "IRS" issues brought by CEO [D10]
Directors	Board responds promptly to "IRS" issues brought by JHSC [D13]
CC&CM	Board responds promptly ... to "IRS" issues brought by JHSC [CC11]
H&S	Board responds promptly ... to "IRS" issues brought by JHSC [OH11]
CC&CM	has CEO asked JHSC for evidence re "IRS" performance [CC8]
OHS	has CEO asked JHSC for evidence re "IRS" performance [OH8]

SEO	the Executive responds promptly and appropriately to reports re "IRS" from [JHSC or worker members] [SEO13]
SEO	responds promptly and appropriately to reports by the VP [Mine's Managers] regarding the "IRS" [SEO11]
Manager	Company officers respond promptly and appropriately to reports by me regarding the "IRS" [M13]

None of the nine questions below were included in other question clusters. We can expect that the first six questions might not be well understood in organizations where the IRS itself is not well understood. They are the type of motherhood question that all senior people would tend to respond positively to, independent of OHS performance. However, we did receive some very frank responses to some of these questions—with both extremes being represented.

Questions D6 and SEO6 are, in contrast, very important. However, we can suspect that they were responded to positively without separating out the IRS as a distinct test for Executive performance. If OHS is an issue at all at higher levels of the organization, one could expect an affirmative response. We believe there was generally a problem with senior people believing that "IRS" and "OHS" are synonymous. For a number of questions asking about the "IRS", we should rephrase the questions something like: "Keeping in mind that the 'IRS' and 'health and safety' are not the same thing, have you, in the last year, reviewed the IRS with the CEO?" (Question D7, for example.)

Director	in the last year have you reviewed the "IRS" with the CEO? [D7]
SEO	in the last year the Board have reviewed "IRS" with me? [SEO7]
SEO	Executive have provided "IRS" direction to Manager [SEO15]
Manager	Executive have provided "IRS" direction to Manager [M42]
SEO	in the last year have you reviewed the "IRS" with the manager? [SEO8]
Manager	in the last year the Company officers have reviewed "IRS" with me? [M6]
Directors	important criteria in appointments is ability & motivation re "IRS" and H&S [D6]
SEO	important criteria in appointments is ability & motivation re "IRS" and H&S [SEO6]
Manager	have you a clear mandate to operate a safe mine [M19]

In Chapter 4, we briefly discussed how the "accountability" questions are important, but that they are poorly answered—perhaps, in part, because "holding people

accountable" is a popular idea, but seems to be weak in concrete terms. What senior executive would answer "no" to Question SEO31 below? Yet we have never seen an article on the business pages of the Globe and Mail about a CEO terminated by a Board for poor OHS performance. "Accountability" is one of those "theory versus practice" chasms. If the audit tool were to be used as part of a full, in-depth analysis by an outside, third party, then perhaps interviews could supplement the audit questions. What would be most effective in an interview is where one could ask "*how* have you been held accountable for OHS performance?" and, at the same time, show a set of OHS statistics for the company compared with the best performers in the industry. For these reasons, we feel that "Accountability" questions such as SEO31 and M3 should be dropped.

SEO	do you expect to be held accountable for the H&S performance of the Company by the Board? [SEO31]
Manager	do you expect to be held accountable for the H&S performance of the mine by Company officers? [M3]

The following four questions were also included in a performance-factor cluster and some of the ambiguities surrounding them were briefly discussed in Chapter 4. Although the majority of the responses were positive, we did receive some negative answers.

SEO	is H&S an agenda item at every Board meeting? [SEO16]
Director	is H&S an agenda item at every Board meeting? [D15]
SEO	is H&S an agenda item at every Executive meeting? [SEO17]
Manager	is H&S an agenda item at every meeting you have with Company officers? [M35]

These two questions below also appear in other question clusters. There is educational value in continuing to ask senior people these questions. They will, in turn, ask when the reports are being prepared. We could simply check the documents if our only desire was to know if OHS is addressed in the annual report. Indeed, we did a review of annual reports (see Appendix 5) and found that OHS was not well presented in many cases—OHS was frequently eclipsed or subsumed by environmental concerns.

Director	has Company H&S performance been addressed in every one of the last 5 Annual Reports? [D16]
SEO	has Company H&S performance been addressed in every one of the last 5 Annual Reports? [SEO18]

The first four questions, in the group of six below, were not included in any other question clusters. They are excellent questions, since leadership of the motivational sort has to have an impact on the troops. A worker isn't going to say "yes" to Question 25 just because the CEO has tweaked an administrative glitch somewhere; "yes" will come if the worker has seen or heard of the CEO coming to the workplace and talking to people about safety. There is great value in these questions when the CEO knows they are being asked of people. When visits from senior executives become commonplace, we would have to ask workers about their sense of the CEO's sincerity when talking about OHS. Some may say such questions would be too subjective—but not at all. People gauge the sincerity of others in very subjective and intuitive ways, but they generally do a pretty good job of it.

Worker	are you aware of the CEO showing commitment in H&S performance at the mine in the last year? [W25]
FL Supv	are you aware of the CEO showing commitment in H&S performance at the mine in the last year? [FLS28]
CC&CM	I have seen specific examples of the CEO's H&S leadership in the last year [CC13]
OHSP	I have seen specific examples of the CEO's H&S leadership in the last year [OH13]
SEO	in the last year have you shown the Board examples of your H&S leadership? [SEO20]
Director	in the last year the CEO has shown the Board examples of his H&S leadership? [D18]

The final two questions in the group above—Questions SEO20 and D18—also contributed to the performance-factor clusters discussed in the previous Chapter. Again, positive answers may be forthcoming regardless of OHS performance. Senior people may interpret anything positive done for OHS (and there's always something that can be said to have been done) as "leadership". However, we do have corroborating questions of workers and front-line supervisors above—Questions W25, FLS28. As well, the questions should remain simply for their educative value.

The following four questions appear in other question clusters, and have already been commented upon. They are subject to a "yes" no matter what the real value of the "plan" is and, consequently, need to be reconsidered. We could ask, for example, if there is a plan with certain characteristics, such as written objectives for all levels of the organization, or timelines and schedules. It would be a likely improvement in correlation

if the workers and supervisors were asked if an OHS plan, originating from the top of the organization, had been the subject of a recent training session, with actions set out for everyone.

Director	is there a plan to improve H&S performance within the Company? [D3]
SEO	have you approved, or do you know of a plan to improve H&S performance within the Company? [SEO3]
CC&CM	is there a plan to improve H&S performance within the Company? [CC3]
OHSP	is there a plan to improve H&S performance within the Company? [OH3]

In the group of four questions below, SEO23 and D21 were *not part of* performance factor clusters. The point here is that too often people view OHS as something covered by the regulations, with no need to go further. Under the IRS, we want to see people understand that it is up to them to spot circumstances when there is a hazard that is novel, unique, or unexpected and is therefore not covered by existing rules. When people do identify hazards, they should feel *personally* responsible for doing something about them. An executive might scratch his or her head unless there was an existing training element in the management system that specifically covered the processes we are expecting here.

Similarly, Questions SEO25 and D22 did not form part of any other question cluster. They too would require a training element devoted to the ideas of creativity and initiative for OHS. They may prompt review of recognition systems for people contributing valuable suggestions for improvements.

SEO	in the last year I have shown the Board how the OHS system covers risks etc. beyond the regulations [SEO23]
Director	in the last year the CEO has shown the Board how the OHS system covers risks etc. beyond the regulations [D21]
SEO	in the last year have you shown the Board how the H&S system encourages individual initiatives? [SEO25]
Director	in the last year the CEO has shown the Board how the H&S system encourages individual initiatives? [D22]

Adding a question that asks workers if a system or process for recognizing individual initiative had been the subject of a recent training session would improve the utility of this group of questions.

5.3.2 *Mine Managers' Commitment*

There were 36 questions in this cluster and, of these, 27 also formed part of the performance-factor clusters. There was no significant correlation between responses to this cluster, taken as a whole, and OHS performance. Part of the problem may that there was considerable homogeneity in the answers given by the mine managers, irrespective of the mine, and their questions formed nearly half of the questions that make up this cluster.

The manager's position in the central core of the IRS is between the middle managers and the executives. There were six questions that asked middle managers about their interaction with the manager. And there were three questions asking senior executives about the manager's performance. The managers themselves had 16 questions that essentially asked them to assess their own performance. Only one question in this cluster was directed to workers and only one was directed to front-line supervisors. In order to improve the correlation of answers to this cluster with OHS performance, more questions asking about the performance of the manager will have to be directed to the workers and the front-line supervisors.

The following 13 questions set the stage for the manager's interaction with the middle managers as well as covering some general issues—e.g., does the manager show signs of engaging in "IRS analysis" when visiting the workplace.

Mid Mgr	re mandate to operate a safe section of the mine [MM23]
Manager	has given "IRS" direction to Sr. supervisor [M11]
Manager	in the last year have you reviewed "IRS" with the Mid Mgrs.? [M7]
Manager	I respond promptly and appropriately to "IRS" reports from my Sr. supervisors [M12]
Manager	I respond promptly and appropriately to reports regarding the "IRS" [M34]
Manager	important criteria in appointing supervisors is ability & motivation re "IRS" and H&S [M31]
Manager	when he visits a workplace he looks for symptoms of "IRS" failure [M24]
Manager	regularly reviews JHSC minutes to look for signs of "IRS" failure [M41]
Mid Mgr	did your manager talk with you in the last year about your H&S powers and responsibilities? [MM3]
Manager	I regularly hold my people accountable for delegated H&S work [M4]

Mid Mgr	my manager has told me how often, and how to show him that I have carried out my delegated H&S powers and responsibilities [MM4]
Manager	is H&S an agenda item at every meeting with Mid Mgrs.? [M20]
Manager	when I am in the mine I always talk about H&S with the workers and supervisors [M23]

The following three questions are the traditional ones asking about appropriate response to problems and concerns, as opposed to asking about initiatives aimed at improvements. We suggest that this sub-grouping needs to be supplemented with more questions asked of workers and front-line supervisors. We know from our interviews that some dissatisfaction of workers comes from the way problems can disappear into the management system. We need to ask specifically about time lines, the prevalence of "up-dates", and the adequacy of response of the manager from the workers' perspective.

Manager	I respond promptly and appropriately to H&S issues and problems raised by the workforce [M14]
Mid Mgr	my manager responds promptly and appropriately to H&S issues I raise [MM15]
Manager	when there is an unresolved H&S concern, do you work together with supervisors and crews to sort it out? [M5]

The following two questions are about going beyond dealing with complaints and problems. We would expect a dialogue between middle managers and the manager about ways to motivate workers to take initiative. Motivation for initiative is an on-going, never-ending task. Question MM13 is about the middle manager/manager interaction in regard to workplace improvements. But we need to know more about how the manager responds to suggestions for improvements made by workers and by front-line supervisors.

Mid Mgr	have you discussed with your manager how to encourage your crews to take initiative to suggest improvements in how to do the work? [MM7]
Mid Mgr	my manager responds promptly and appropriately to my recommendations to improve work processes [MM13]

As discussed elsewhere, we expect there to be explicit techniques embedded in the management system programs that will encourage initiative for OHS. Again, we are not always confident that an atmosphere of enthusiasm did not cloud the specific issue of initiatives.

Manager	in the last year have you shown the Company officers how the OHS system encourages individual initiatives? [M39]

SEO	in the last year the manager has shown the Company officers how the OHS system encourages individual initiatives? [SEO26]

The following collection of eight questions is an excellent way to assess how others view the manager's efforts at OHS leadership. Only one of the questions (M36) is directed to the manager, the others are aimed at people above and below the manager, and at the "internal auditors". While we couldn't ask "mirror questions" of everyone about everything up and down the central core of the IRS, we will have to consider adding a question to the middle manager as to whether he or she saw any sign of the manager's leadership.

Manager	in the last year I have shown examples of my H&S leadership to the Company officers [M36]
SEO	in the last year the manager has shown the Company officers specific examples of his H&S leadership [SEO21]
Worker	in the last 6 months I have personally witnessed the manager or superintendent showing his H&S leadership [W26]
FL Supv	in the last 6 months I have personally witnessed the manager or superintendent showing his H&S leadership [FLS29]
CC&CM	in the last year I have seen specific examples of the manager's H&S leadership [CC14]
OHSP	in the last year I have seen specific examples of the manager's H&S leadership [OH14]
CC&CM	in the last year I can provide several examples of the manager going beyond just responding to H&S concerns, by taking initiative to improve work processes that would also improve H&S performance. [CC35]
OHSP	in the last year I can provide several examples of the manager going beyond just responding to H&S concerns, by taking initiative to improve work processes that would also improve H&S performance. [OH34]

As we have already mentioned, few people would admit to not having a "plan" and, indeed, the responses to the three questions below were generally positive. What we need to be assured of is that "the plan" is a good one.

Manager	are you implementing a plan to improve H&S performance at the mine? [M30]
CC&CM	is their a plan to improve H&S performance within the Company? [CC3]
OHSP	is their a plan to improve H&S performance within the Company? [OH3]

As discussed elsewhere, we expect the OHS management system to be going beyond the regulations. We are looking for signs that the people in the organization

understand and are motivated to look for risks that haven't been captured in specific regulatory standards.

Manager	in the last year I have shown Company officers how the H&S system covers risks etc. beyond the regulation [M38]
SEO	in the last year the manager has shown Company officers how the OHS system covers risks etc. beyond the regulation [SEO24]
CC&CM	does the OHS management system cover risks beyond the regulations? [CC19]
OHSP	does the OHS management system cover risks beyond the regulations? [OH19]

The question below may seem to be the odd one out. It is a sign that the IRS is alive and well if we find that the OHS professional has a reference to his or her role as a promoter, auditor, educator, etc. of the IRS in his or her job description. Conversely, it would be a sign of poor leadership and confusion about the IRS is we find the OHS professional responsible for doing the OHS work that should be done by others within the central core of the IRS.

OHSP	reference to monitoring and improving "IRS" in job description of OHS Prof. [OH35]

5.3.3 Middle Managers' Commitment[27]

Middle managers are located between the front-line supervisors and the mine manager in the central core of the IRS. There were 18 questions in this cluster. Of these, half (9) were asked directly of the middle managers. Seven questions were asked of the middle managers' immediate subordinates (the front-line supervisors), and mine managers were asked two questions about their immediate subordinates (i.e., the middle managers). Of the 18 questions in this group, 16 are also in the performance factors clusters. Only Questions FLS3 and M37 are unique to this cluster. Workers, the internal auditors and the most senior people were not asked anything about the middle managers. The responses to this cluster, taken as a whole, did not correlate significantly with OHS performance—again, probably because there was fair amount of homogeneity in the responses given by middle managers, irrespective of the mine.

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27 In one of the mines, because of the way it was organized, there was no appropriate middle-manager level.

Four of the following five questions are directed to front-line supervisors. They are general questions to "set the stage".

FL Supv	did your supervisor talk with you in the last year about your H&S powers and responsibilities? [FLS3]
FL Supv	do you clearly understand who you are responsible for? [FLS35]
FL Supv	do you clearly understand the physical bounds of your area? [FLS36]
Mid Mgr	I regularly hold my people accountable for delegated H&S work [MM5]
FL Supv	my supervisor tells me how often, and how to show him that I have carried out my delegated H&S powers and responsibilities [FLS4]

The three questions below are the traditional ones regarding response to OHS problems. We expected Question FLS14 to give a particularly reliable response because there should be enough issues arising, with enough pressure from expectant workers for front-line supervisors to be especially sensitive as to how their reporting up to middle managers is handled. And indeed, if we discount the responses from the mine where we had no middle-managers, responses to this question correlate significantly with OHS performance.

Mid Mgr	I respond promptly and appropriately to H&S issues and problems raised by my crew [MM16]
FL Supv	my supervisor responds promptly and appropriately to H&S issues and problems I raise [FLS14]
Mid Mgr	when there is an unresolved H&S concern, do you work together with supervisors and crews to sort it out? [MM6]

The following questions are aimed at the issue of initiative under the IRS. Here we are tracking the middle manager's response to the initiatives of others, as well as the initiative of the middle manager him or herself. The responses were generally positive, but with some strongly negative responses from front-line supervisors.

Mid Mgr	have you encouraged your crews to take the initiative re H&S in the work, and not just follow the rules? [MM8]
FL Supv	have you discussed with your supervisor how to encourage your crew to take initiative to improve H&S in the work, in the last year? [FLS7]
FL Supv	my supervisor responds promptly and appropriately to my initiatives on improving H&S in the work [FLS13]
Mid Mgr	in the last 3 months have you taken the initiative and suggested a way of improving H&S performance to your manager? [MM12]

Manager	in the last month has one of your people taken the initiative and suggested a way of improving H&S performance? [M10]

Another question worth asking is whether the IRS is a category of a middle manager's regular analysis of the workplace and of interactions with subordinates, and this is probed in the group of questions below. In addition, this sub-grouping is looking for those leadership activities such as direct involvement with workers and front-line supervisors through meetings and tours. The responses were, by and large, positive.

Mid Mgr	when they visit a workplace they look for symptoms of "IRS" failure [MM29]
Mid Mgr	I respond promptly and appropriately to "IRS" reports from my supervisors [MM14]
Mid Mgr	do you attend crew safety meetings? [MM24]
Mid Mgr	when I am in the mine I always talk about H&S with the workers and supervisors [MM28]
Manager	in the last year has Sr. supervisors show you examples of their H&S leadership? [M37]

5.3.5 Front-line Supervisors' Commitment

The cluster dealing with the "leadership" of front-line supervisors in the IRS comprised 21 questions, with eight questions being directed at the front-line supervisors themselves and 10 to workers; the remainder were directed to the front-line supervisors' own supervisors or to the "internal auditors" (Questions MM11, CC34 and OH33). All the questions, with the exception of Questions W3, W8, and W24 are also in the performance factor clusters. The responses to the questions in this front-line supervisor cluster, taken as a whole, correlated significantly with OHS performance. So we can say the "leadership cluster" for front-line supervisors is "validated".

The following group of five questions below set the stage, or rather, determine if the stage has been set. We expect an on-going dialogue between worker and front-line supervisor. In part, this dialogue is about concerns, reports and opportunities for improvement. In part it is instructional. But in part, it is motivational and about process. People need to hear the message on a regular basis—that they have a certain *authority*, that *expectations* are made of them, that reports and initiative are *truly encouraged*, and that their *insights are valued*. This kind of communication has to be on a one-on-one or small-group basis so that individuals can gain their own sense of another's honesty, enthusiasm and sincerity.

Worker	did your supervisor talk with you in the last year about your H&S powers and responsibilities? [W3]
Worker	when I discuss work with my supervisor always makes clear his expectations for H&S performance [W18]
FL Supv	when I assign work I am clear in my instructions about the need to do it safely [FLS23]
FL Supv	I regularly hold my people accountable for delegated H&S work [FLS5]
Worker	my supervisor expects me to show him/her that I have taken care of the hazards, and improved things, in my workplace [W8]

The following five questions are closely related to those above. They are about problems and concerns between the worker and the front-line supervisor. We are not yet asking about initiative for improvements, but rather are asking about a traditional response to defects, hazards and so on. We want to see both that reporting is encouraged and that it is followed up by appropriate responses. Simply asking people whether they complain is of little value and, anyway, is not the point of the IRS.

FL Supv	in the last 3 months, have you encouraged your crew to bring H&S problems to you, and not cover them up? [FLS6]
Worker	in the last year, has your supervisor discussed with you the importance of bringing H&S concerns to him/her? [W4]
Worker	it is clear who I go to in supervision with a suggestions or concerns re H&S [W24]
FL Supv	I respond promptly and appropriately to H&S issues and problems raised by my crew [FLS15]
Worker	my supervisor responds promptly and appropriately to every H&S issue I raise [W9]

As discussed several times in this report, we believe it is critical that people view OHS as something more than a subject of complaint; that it is part of being creative about the work one is involved with. The three questions below are directed to the worker/front-line supervisor interaction and probes whether initiative is something that is being discussed and encouraged. We are interested in knowing whether worker initiatives are responded to properly; because, if they are not, then over time workers will cease making positive suggestions for improvement.

Worker	in the last year, have you discussed with your supervisor how to take initiative to improve H&S in your work? [W5]

FL Supv	have you encouraged your crew to take the initiative re H&S in the work, and not just follow the rules? [FLS8]
Worker	my supervisor responds promptly and appropriately to my initiatives on improving the work processes [W10]

We do not expect a front-line supervisor to just respond reactively to concerns and reports by workers. There will be some issues that only the supervisor is in the best position to spot. We want initiative, creativity and leadership at all levels. The following four questions aim to determine whether the front-line supervisors are themselves identifying ways to improve the processes they are involved with.

FL Supv	in the last 3 months, have you taken the initiative and suggested a way of improving H&S performance? [FLS12]
Mid Mgr	in the last month has one of your supervisors taken the initiative and suggested a way of improving H&S performance? [MM11]
CC&CM	do you know of several cases where supervisors made H&S improvement initiatives in the last year? [CC34]
OHSP	do you know of several cases where supervisors made H&S improvement initiatives in the last year? [OH33]

These two questions below are a double check on the supervisor's understanding of the IRS. A supervisor who does not understand the IRS will be unable to take leadership on OHS but will, rather, slough off the worker's concern to someone else—an action that is also symptomatic of an impoverished view of the IRS.

FL Supv	I refer workers with H&S concerns to the worker member of the JHSC or the safety dept. [FLS22]
Worker	when I have a H&S concern my supervisor refers me to the worker member of the JHSC or the safety dept. [W17]

The following two questions are "planning" type questions that have an element of initiative. Rather than just following the routine, or attempting to carry on with the routine when something novel has been introduced into the workplace, we are expecting the good supervisor to do pre-job analysis.

FL Supv	I do task analysis etc. to avoid learning by trial and error with new equipment, processes and materials [FLS20]
Worker	the last time I had to use new equipment etc., the supervisor had thought out how the job should be done to avoid learning by trial and error [W15]

5.3.5 Workers' Commitment

The cluster dealing with worker commitment and leadership (a small group of only four questions) were not significantly correlated with OHS performance. There were too few of them. In fact, there was only one question aimed directly at workers. Question W7 is still a very good question, although we can ask if people were making the desired distinction between the usual reporting of problems and the desired taking of initiative to make improvements. Questions CC33 and OH32 are not just corroborative. We might expect the JHSC members and the OHS professional to have greater opportunity to see where people are moving beyond reaction to problems to suggesting ways of improving things, as they may be called in for advice.

Worker	have you made suggestions for improvements in the last 3 months? [W7]
FL Supv	has at least one of your crew brought you a H&S improvement initiative in the last month? [FLS11]
CC&CM	do you know of several cases where workers made H&S improvement initiatives? [CC33]
OHSP	do you know of several cases where workers made H&S improvement initiatives in the last year? [OH32]

We need more questions about the leadership of workers. There is much overlap between the idea of "leadership" and "taking initiative", but there are further aspects of leadership we can pinpoint. We could ask questions such as:

Worker	In the last year, I have encouraged a co-worker to comply with a safety procedure
Worker	In the last year, I have encouraged a co-worker to take initiative and bring forward a proposal for a safety improvement
Worker	In the last year, I have questioned an experienced co-worker about the risks he or she undertakes on the job
Worker	In the last year, I have intervened when I have seen an inexperienced co-worker doing something unsafe, even if the risk was only to that worker
Worker	In the last year, when I have seen my supervisor not making a good decision about safety, I have discussed the matter with my supervisor's supervisor
Worker	I am not personally responsible for doing something about an unsafe condition that I see in an area that is not my immediate work area
Worker	It is not my business to talk to my supervisor about on-going and deliberate safety shortcuts taken by my co-worker

Worker	I would raise a safety concern directly with the mine manager if he came around to observe the work
Worker	In the last year, I have dropped by the health and safety co-ordinator's office to discuss an idea I had to improve safety

5.3.6 Committee Co-chairs' & Certified Members' Commitment

There are 19 questions in the cluster dealing with JHSC commitment in the IRS, 11 of which were asked of the co-chairs and/or certified members themselves. There was no significant correlation between the responses to these questions, taken as a whole, and OHS performance.

The main group of questions dealt with the functions of the JHSC in the IRS:

CM	when I inspect a workplace I look for symptoms of "IRS" failure [CM43]
CC&CM	JHSC has audited "IRS" [CC25]
CM	do you ask workers why they could not deal with the H&S problem by themselves [CM36]
CM	do you ask workers why they could not deal with the H&S problem in cooperation with their supervisor [CM37]
CM	when they deal with an H&S problem is one of the aims to find how "IRS" failed? [CM38]
CM	if the main elements of "IRS" are working properly there should be no work refusals [CM41]
CC&CM	have you talked to people at all levels about "IRS" and how it works? [CC24]
Worker	worker member of JHSC has advised me to take H&S problems to them rather than my supervisor. [W32]
CC&CM	does the worker member try to find the underlying "IRS" issues as well as immediate concerns re unsafe acts and conditions? [CC26]
OHSP	does the worker member try to find the underlying "IRS" issues as well as immediate concerns re unsafe acts and conditions? [OH26]
CM	when I receive a report or complaint about an H&S problem, I always look if the cause is a weakness in the H&S management system [CM39]

Question CC25 is a "sleeper". We wouldn't expect the JHSC to have audited the IRS at this time, but we would expect it in a year or two from now, so this question could improve the correlation in the near future, even though it does not at the moment. Question CM41 should probably be re-assigned to the "Understanding" cluster. And we feel that Question CC24 could be replaced with questions of a more direct nature:

CC&CM	When you talk with workers do you promote the IRS as you understand it (your answer to Question 1A)?
CC&CM	If you talk with the CEO, do you promote the IRS as you understand it (your answer to Question 1A)?
CC&CM	When I find a supervisor or manager who is not doing a good job for safety I would feel inhibited about personally going to see that person's boss to discuss the matter

The following six questions are of a corroborative nature. As the JHSC becomes more accustomed to formally and expressly addressing IRS issues, we would expect to see a divergence of answers between good and bad OHS performers, which would improve the statistical correlation for this sub-group. Where the IRS is not a clear and active concept, all organizations, whether good or bad would tend to answer the same.

Manager	have you received reports re "IRS" from JHSC in the last year? [M33]
CC&CM	in the last year has the JHSC reviewed performance of "IRS" with the CEO? [CC7]
SEO	in the last year the Executive has received reports from the JHSC or worker members about "IRS" performance? [SEO12]
CC&CM	in the last year the JHSC has reported to the Board about the status of "IRS" [CC10]
Director	in the last year the JHSC has reported to the Board about the status of "IRS" [D12]
OHSP	in the last year the JHSC has reported to the Board about the status of "IRS" [OH10]

If we are seeking a measure of the performance of the JHSC, then we would expect the following two questions to be critical. However, answers to these questions—either taken as a whole, or individually—did not correlate with OHS performance. This may have been due to the fact that, with the exception of one mine, there was considerable divergence in opinion between the responses from workers and the (mirrored) responses from front-line supervisors.

Worker	JHSC is effective in resolving issues with management that my supervisor and I cannot resolve together. [W31]
FLS	JHSC is effective in resolving issues with management that my workers and I cannot resolve together. [FLS19]

5.3.7 OHS Professional's Commitment

The cluster dealing with the OHS professional's commitment to the IRS consisted of seven questions; only two were corroborative, and none was aimed at workers or front-line supervisors. There was no correlation between responses to the questions, taken as a whole, and OHS performance.

The five main questions aimed at the OHS professional will generally always be answered correctly as OHS professionals should know all the right answers. We therefore need to amend this portion of the audit tool and ask questions of the people in the central core of the IRS about the beliefs and actions of the OHS professional.

OHSP	have you audited "IRS" in the last year [OH25]
OHSP	have you advised the JHSC on "IRS" issues on many occasions [OH27]
OHSP	have you talked to people at all levels about "IRS" and how it works? [OH24]
OHSP	in the last year have you arranged for "IRS" training? [OH36]
OHSP	in the last year have you reviewed performance of "IRS" with the CEO? [OH7]

The final two questions are corroborative and concern the level of activity of the OHS professional on the IRS concept itself.

CC&CM	has OHSP discussed "IRS" performance with the JHSC? [CC27]
Manager	in the last year have you received status reports on "IRS" from OHSP? [M32]

5.4 MOL INSPECTORS

There was no significant correlation between the inspectors' questions and OHS performance of the mines they were personally involved with. And, realistically, we would not expect there to be a correlation. The inspector's commitment should be consistent across workplaces, regardless of the OHS performance of the site.

Of the 15 questions in this group, 14 were "self assessment" questions. That is, there was only one corroborative question, and that was directed to the certified members of the JHSCs.

Inspectors	in the last year, have you discussed the state of the "IRS" with JHSC members several times? [I6]
Inspectors	in the last year, have you discussed the state of the "IRS" with OHSP several times? [I8]

Inspectors	in the last year, have you discussed the state of the "IRS" with the manager several times? [I9]
Inspectors	do you always bring weaknesses in H&S or "IRS" to the manager? [I10]
Inspectors	when handling complaints etc. do you always try to get to the underlying causes in the "IRS" and OHS management systems [I15]
Inspectors	do you treat the worker members of the JHSC as a good source of information re the status of "IRS" [I17]
CM	do the inspectors treat you as a good source of information re the status of "IRS"? [CM42]
Inspector	do you review the JHSC minutes to see how well "IRS" is working? [I16]
Inspector	in the last year, have you usually spoken with the people you meet about "IRS" and their roles in it? [I4]
Inspector	when you talk with workers, supervisors and the manager do you always ask them about their initiatives to improve H&S? [I11]
Inspector	in the last year, have you talked with the JHSC members about their role in "IRS" on several occasions? [I5]
Inspector	in the last year, have you talked with the OHSP about their role in "IRS" on several occasions? [I7]
Inspector	have you talked to the President or VP about "IRS" and H&S performance? [I12]
Inspector	have you talked to the Board about "IRS" and H&S performance? [I13]
Inspector	I usually advise workers with a H&S concern to go to the worker member of the JHSC or the safety dept. instead of their supervisor. [I14]

We can improve this group of questions by asking the people in the workplace about the inspector's understanding of the IRS and the inspector's actions that illustrate the inspector's understanding. All we need to do is ask the multiple choice question of the inspector's understanding of the IRS and then focus on the people in the workplace. One might suspect that, over time, inspectors will have no difficulty in answering all the points on the big IRS multiple choice question correctly, and so, ultimately, the best assessment will be that of others.

A unique feature of the questionnaire administered to inspectors was the question:

Inspector	given your understanding of the IRS, could you please describe for us in a paragraph, what the role of the Ministry of Labour Inspector should be? [I2]

The replies were interesting and illuminating:

- The MOL inspector's role is to reinforce this concept that the workplace parties resolve their own issues. The MOL inspector is a last option. When called by either of the parties we should be promoting the IRS by asking the parties to get back together and try to reach a safe mutual understanding.

- The Ministry of Labour inspector should be there to enforce the Occupational Health and Safety Act and Regulations when the IRS within the Company starts to fail.

  The inspectors audit the IRS at each Company, which determines frequency of visits.

- The Ministry inspector's role is to audit the workplace for compliance with the Occ. Health and Safety Act and Regulations. As these laws directly involve the workplace and how work is performed, these audits are a measure of how people in an organization exercise their responsibilities in complying with the law. The inspectors are often called upon to mediate differences between management and workers, i.e., work refusals. The inspectors can promote IRS by promoting good effective communications amongst workplace parties and by encouraging the parties to mediate their differences without a third party imposition.

- The role of the Ministry of Labour inspector with respect to the IRS is, in my opinion, that of an auditor of the IRS, ensuring that the Regulations prescribed by the Occupational Health and Safety Act (OHSA) are carried out in the workplace.

- Set, communicate and enforce legislated criteria.

- To be used as a resource for both employer and workers (i.e., Act and Reg. interpretation, etc.)

  To be called upon primarily when issues at the workplace appear un-resolved.

  To be a person to monitor the IRS at a given workplace and to offer and/or enforce suggestions and orders to correct perceived shortcomings.

  To be a tool for both employer and worker and JHSC respecting information gathered at other workplaces that may be of benefit to other workplaces.

  *** I believe that the MOL inspector should not be a direct part of the IRS, but only there to be assistance to all workplace parties.

- Under new mandate. MOL inspector is the auditor of IRS. MOL inspector is a motivator of the IRS through enforcement of the legislation.

- The MOL inspector should audit the IRS at each site and on a regular basis. This can be done by reading the minutes from the JHSC meeting and by asking questions about refusals to work and complaints. JHSC members should be questioned at length if problems are noted. Management should be encouraged, and if required, ordered to co-operate with the Committee. However a JHSC that works because members want

it to work is better. The inspector should also give examples of what other JHSC are doing in the area that may have a positive effect

- Primarily to enforce legislated criteria which includes the OHSA, Regulations. Also to investigate complaints, etc. Ensure that the IRS is in place and functional.
- The inspector is both a resource and guide in the solving of problems and health and safety issues. Because of his position he can direct persons to other persons in safety re their concerns, places like MASHA, IAPA, safety associations, etc.

Each of these bullet points corresponds to the answer from one inspector. There was, in some instances, more than one inspector associated with a mine and, in one case, one inspector had responsibility for two of the mines in the trial audit. Because responses from inspectors associated with the two mines involved in the pilot audit have not been presented in our other reports, we have included them in the above compilation.

As may be seen, there is a variety of opinions among the inspectors as to their role in the IRS. This finding is perhaps symptomatic of a lack of a common understanding within the Ministry itself of what constitutes the IRS. It does suggest the need for a coherent vision of the IRS to be adopted and, equally importantly, communicated. The description of the IRS produced with the assistance of the Steering Committee and presented in Chapter 2 would be a good place to start.

5.5 MINING CONTRACTORS

The interfaces between the owner's workforces and the contractor's workforces were tested at two sites by adding questions (two to five, depending on the respondent's role within the IRS) to the questionnaires administered at the sites and to the inspectors responsible for the sites.[28] The additional questions are included in the questionnaires presented in Appendix 1. We received the following response:[29]

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28 Additional questions were *not* asked of the Executives or Board Members.

29 Some of the respondents did not reply to these specific questions and, in follow-up interviews, some respondents told us this was because they had no contact with the Contractor workforce.

	OWNERS'	CONTRACTORS'
Workers	30 to 45	9
Front-line supervisors	10	2
Middle Managers	7	1
Managers	2	2
JHSC Members	7	3[30]
H&S Co-ordinators	2	2

To give an idea of the owner/contractor interaction, a summary of the responses is provided below. Because we had only a small sample (two mines out of the six in the trial audit, and, in terms of total numbers of contractor personnel available to respond to our questionnaires, a fairly sparse representation from the contractor "community"), it would be unwise to consider these results as being generally representative of the mining contractor community at large.

5.5.1 Responsibility

The following groups of questions deal with the way personnel from clients and contractors view their responsibility towards the personnel of the other group.

Worker	I believe I have some responsibility for the safety of the contractor's workers in and near my workplace [Owner's W33]
Worker	I believe I have some responsibility for the safety of the Client's workers in and near my workplace [Contractor's W33]

The responses were, by and large, positive to these above two questions. However there were a few (10 to 20%) negative responses.

Worker	the contractor's workers who work near my workplace keep my health and safety in mind [Owner's W34]
FL Supv	the contractor's workers who work in my area keep in mind the health and safety of my workers [Owner's FLS43]

30 All three respondents were from the same contractor.

And, about two-thirds of the owner's workers responded positively to the questions directly above, as did all of the supervisors.

Worker	the contractor's workers have to work to the same Company standards that I do, plus the contractor's standards [Owner's W35]
FL Supv	the contractor's workers have to work to the same Company standards that we do, plus the contractor's standards [Owner's FLS44]

A large majority (>80%) of the workers, and all of the supervisors made positive responses to the above two questions.

Worker	when the Client's supervisors check my workplace they do look at the health and safety aspects of the work [Contractor's W34]
FL Supv	I do not have to be concerned at all about the health and safety of the contractor's workers since it is their responsibility to work in a safe and healthy way [Owner's FLS42]
Mid Mgr.	I do not have to be concerned at all about the health and safety of the contractor's workers since it is their responsibility to work in a safe and healthy way [Owner's MM42]
Manager	I do not have to be concerned at all about the health and safety of the contractor's workers since it is their responsibility to work in a safe and healthy way [Owner's M47]

Among the contractor's workers there was general agreement with the above statements; but about 20% of contractor's respondents disagreed, at least to some extent. Among the different levels of owner's staff there was generally a strong feeling of responsibility for health and safety of contractor's workers.

Worker	I do not have to be concerned very much about health and safety since it is ***primarily*** the job of the Client's supervisors and Health and Safety Committee [Contractor's W35]
FL Supv	I do not have to be concerned very much about health and safety since it is ***primarily*** the job of the Client's supervisors and Health and Safety Committee [Contractor's FLS43]

Among contractor's workers there was a strong disagreement with the statement above. However the contractor's supervisors ALL stated they "Somewhat Disagreed".

5.5.2 Communication on Health and Safety Matters

The following groups of questions deal with communication on health and safety matters, and on responses to issues.

FL Supv	I have an open line of communication with the contractor's workers and supervisors on health and safety matters [Owner's FLS41]
FL Supv	I have an open line of communication with the Client's supervisors on health and safety matters [Contractor's FLS42]

All but one of the responses to the above questions were positive, however about half where in the "Somewhat Agree" category.

Mid Mgr.	have you received reports and/or complaints ***from*** your contractor about the health and safety practices of Company crews? [Owner's MM38]

The overwhelming answer by the middle managers was that no reports or complaints had been received.

FL Supv	the Client responds promptly and appropriately to recommendations by me on how to improve health and safety in the work processes [Contractor's FLS41]
Mid Mgr.	I respond promptly and appropriately to problems and issues raised to me by the contractor regarding health and safety [Owner's MM40]
Manager	I respond promptly and appropriately to problems and issues raised to me by the contractor regarding health and safety [Owner's M45]

The one contractor's supervisor that responded to the above gave a positive answer. The owner's middle managers were positive. The owner's managers gave neutral answers, which presumably indicated that no such concerns reached them.

Mid Mgr.	have you made reports and/or complaints ***to*** your contractor about the health and safety practices of his crews? [Owner's MM39]
Manager	have you made reports and/or complaints ***to*** your contractor about the health and safety practices of his crews? [Owner's M44]
Mid Mgr.	have you received reports and/or complaints from your Client about the health and safety practices of your crews? [Contractor's MM38]
Manager	have you received reports and/or complaints from your Client about the health and safety practices of your crews? [Contractor's M44]

There was general agreement that reports or complaints have been made or received.

Mid Mgr.	the contractor responds promptly and appropriately to problems and issues raised by me regarding health and safety [Owner's MM41]
Manager	the contractor responds promptly and appropriately to problems and issues raised to me by me regarding health and safety [Owner's M46]
Mid Mgr.	I respond promptly and appropriately to problems and issues raised to me by the Client regarding health and safety [Contractor's MM39]

Manager	I respond promptly and appropriately to problems and issues raised to me by the Client regarding health and safety [Contractor's M45]

There was a general positive response to the above, although many respondents only stated "Somewhat Agree".

CC&C...	if the contractor's supervisors notice a hazard affecting the Company's workers, they point it out to the Company's workers or supervisors [Owner's CC C]
OHSP	if the contractor's supervisors notice a hazard affecting the Company's workers, they point it out to the Company's workers and supervisors [Owner's OH14]
CC&CM	if the Client's supervisors notice a hazard affecting the contractor's workers, they point it out to the contractor's workers or supervisors [Contractor's CC C]
OHSP	if the Client's supervisors notice a hazard affecting the contractor's workers, they point it out to the contractor's workers or supervisors [Contractor's OH41]

From the owner's representatives there was no "Strong Agreement" responses to the above questions, and one "Somewhat Disagree" response. There were also a significant number of neutral answers.

5.5.3 Health & Safety Committee and H&S Co-ordinator Interaction

The following groups of questions deal with communication and cooperation between Health and Safety Committees or Representatives, and between the OHS professionals. Some also deal with the views of the Committees, Representatives or professionals on the actions of the other's workforce

CC&CM	as a Health and Safety Committee member, or a full-time health and safety representative, I am in communication with the contractor's Health and Safety Committee, (or Health and Safety Representative) [Owner's CC A]
CC&CM	as a Health and Safety Committee member I am in communication with the Client's Health and Safety Committee [Contractor's CC A]

The responses from the owner's JHSC were split between "Disagree" and "Somewhat Agree"—with one "Not Applicable". The responses from the one contractor group responding were split.

CC&CM	as a member of the Company's Health and Safety Committee, or a full-time health and safety representative, I feel that the contractor's Health and Safety Committee (or Health and Safety Representative) cooperates with us to resolve shared health and safety issues [Owner's CC B]
CC&CM	as a member of the contractor's Health and Safety Committee I feel that the Client's Health and Safety Committee cooperates with us to resolve shared health and safety issues [Contractor's CC B]

The responses from the owner's JHSC showed a majority of "Somewhat Disagree" responses—with one "Not Applicable". The responses from the one contractor group responding were positive.

OHSP	I feel that the contractor's Health and Safety Committee cooperates with us to resolve shared health and safety issues [Owner's OH40]
OHSP	I feel that the Client's Health and Safety Committee cooperates with us to resolve shared health and safety issues [Contractor's OH40]

There was a more positive response from the contractor's representatives to the above question than from the owner's representatives. One of the owner's representatives declined to answer.

OHSP	I am in communication with the contractor's Health and Safety Coordinator [Owner's OH39]
OHSP	I am in communication with the Client's Health and Safety Coordinator [Contractor's OH39]

There was complete agreement, among both owner's and contractor's OHS co-ordinators, with these statements.

5.5.4 Our Impressions of the Owner/Contractor Interaction

- At the locations where the audit tool was tested on contractors, it seems that the health and safety interface between the owner's workforce and the contractor's workforce is fairly healthy. However, with the small sample size used this must be treated cautiously.
- The channels of communication seem to be quite open at the middle manager, mine manager, and OHS professional levels.
- There are, however, some areas in which attitudes and actions may be in need of improvement:

    1) some workers (from both camps) have to be convinced to care for the other;
    2) lines of communication may need to be more open between the front-line supervisors and the JHSCs or Representatives; and
    3) more communication between the JHSCs or Representatives might lead to better co-operation on H&S issues.

6. CONCLUSIONS AND RECOMMENDATIONS

In this Chapter we summarize our overall conclusions, make recommendations as to how the audit tool might be modified, and offer suggestions as to how the interested parties might use the results of this study.

6.1 CONCLUSIONS

With the assistance of the IRS Steering Committee we produced a description of the Internal Responsibility System. We set out the roles and responsibilities of the contributors to the IRS, as well as a number of processes important for a successful IRS. The model of the IRS we developed is consistent with previous descriptions in the Ham and Burkett Reports. In Chapter 2 we clarified concepts and processes associated with a well functioning IRS.

The model was used to generate questions for the IRS audit tool. The structural aspects of the IRS led us to pose questions to people at all levels in the organization as well as to the Joint Health and Safety Committee and the OHS professional. We frequently asked questions in couplets—asking people at two different levels of the organization complementary questions to corroborate certain activities. This tends to overcome a natural human tendency to exaggerate one's own positive actions. The functional aspects of the IRS model pointed to necessary questions about certain key behaviours. And, on the basis that understanding leads to action, we also asked questions about beliefs and principles.

The audit tool, and hence the model, was tested against reality. Two mines were visited in an initial phase to work out the main "bugs" in the survey tool. Very importantly, at the end of this initial phase, we devised a 13 part multiple choice question that allowed a "snap shot" assessment of whether a respondent had a good understanding of the IRS. Following adjustments in the questions, a further six mines were audited. The purpose was to validate the audit tool.

A critical test for an IRS audit tool is the correlation between a high score on the audit and a high "score" in OHS performance, namely a low level of occupational injury. Conversely, a company with a poor score on the IRS audit should have a poor accident record. This is the primary method of "validation" of the audit tool. As described in Chapter 3, the audit tool was an excellent predictor of OHS performance. The audit tool

was validated. If the IRS is working well, the organization has fewer accidents, as measured by medical aids (and to a lesser degree, as measured by lost time).

In the process of analyzing the data, we had further insights as to how the audit tool could be improved, and these will be the basis for some of our recommendations below. We also have some suggestions regarding the administration of the audit tool; some of these suggestions are based on the advice of the Steering Committee.

The Steering Committee consists of representatives of many of the parties contributing to the IRS. While it is not our mandate to make recommendations to each of the parties, we thought it helpful to at least make some suggestions as to how the description of the IRS and the audit tool might be used.

6.2 FURTHER MODIFICATIONS OF THE AUDIT TOOL

The time constraints for this project do not allow us the opportunity for another iteration of testing the audit tool. We do, however, suggest that this be done. There are many comments in Chapter 4 during our analysis of the IRS performance clusters about weak questions and suggested re-groupings. In both Chapters 4 and 5 we made some suggestions as to possible replacement questions. An important observation coming from both chapters 4 and 5 is that while there may be an educative purpose in asking IRS questions of certain people in the IRS, the weakness of self-assessment questions becomes obvious. Many of our suggestions have to do with removing questions where everyone was in strong (usually positive) agreement with a statement, regardless of the OHS performance of the mine the people were associated with. Instead, other people in the organization should be giving their assessment of the people's beliefs and actions that we are interested in. We believe that the following types of modifications would give a better overall correlation with OHS performance, as well as improve the correlation of sub-groups and even individual questions.

- Elimination of questions that tended to cause confusion
- Decrease in the number of questions directed to senior management
- Increase in questions to non-senior management about the beliefs and actions of senior management
- Elimination of questions that had little contribution to the correlation with OHS performance

- Change in wording of some questions so as to be more specific or more action oriented
- Re-classification of a small number of questions in the thematic clusters of questions used to focus in on the causes of IRS performance
- A change in the number and nature of the thematic clusters of questions

There is a temptation to drop a lot of the questions to the most senior people on the basis that they tended to answer positively regardless of their company's OHS performance. While some should be dropped, it would be a mistake to stop asking senior people questions. It is far better to ask corroborative questions of others in addition to questions directed to senior people. Dropping questions to senior people completely would tend to undermine the whole exercise in the minds of many participants. In our interviews, we got very positive responses from workers when we told them (in response to their questions) that, yes, managers and executives would be answering similar questions.

We have come full circle on the use of the phrase "Internal Responsibility System". We did use the phrase in the pilot audit of two mines. In the follow-up interviews during this phase, we found that many people were confused by the phrase. In the subsequent trial audit of six mines, we decided not to use the phrase in most of the audit questions, particularly in questions directed to the direct contributors (we would expect the OHS professionals, JHSC members and inspectors to be familiar with the phrase). Instead of "Internal Responsibility System", we used the phrase: "the Company-wide system of responsibility for individual and co-operative action to take care of health and safety issues". The latter phrase is very awkward, and is subject to its own misconceptions. We believe that over time the phrase "Internal Responsibility System" will become more familiar to people. What we suggest is the phrase be used in the questions, but that the following statement be placed at the front of the survey (and possibly as a footnote):

> *"When you see the words "Internal Responsibility System" (IRS) in a question, this means what you described in your answers to Question 1a."*

This will simplify the wording of a lot of questions, and over time it will reduce misunderstanding. The use of the phrase itself has an educative value.

We also found that there was some confusion between the use of the term "IRS" and health and safety management systems in general. They are not the same. We were

getting positive responses from some senior people about IRS questions when they meant OHS systems in general. Consideration should also be given to adding a text box on a covering page, or a footnote below the relevant questions stating, to the effect that: "Please answer on the basis that the IRS and OHS management systems are not the same thing".

More work needs to be done to better calibrate the IRS audit. Better calibration means, in part, that a greater range of OHS performers is surveyed. Testing the audit on a set of workplaces with a greater diversity of OHS performance will result in a greater range of OHS performance to correlate with IRS performance. Better calibration also means testing the tool against a larger number of workplaces. This calibration should be done with the suggested improvements in the number, nature and groupings of the audit questions, as discussed in Chapters 4 and 5.

6.3 THE IRS DESCRIPTION

The description of the IRS is useful in and of itself. A single, authoritative description will reduce misunderstandings about the IRS. Too often in the past one got the sense that people were discussing the IRS while assuming that there was a shared understanding. We are better able to strengthen the IRS when there is a consistency of understanding.

A clear description of the IRS can be incorporated into policy statements, organizational OHS manuals, training materials, and so on. This is the case not only for employers, but also for government and Safe Workplace Association publications.

Certainly more work can be done by the MOL, MASHA and others to find ways of bringing the IRS model to life—for example, providing visual representations, videos, websites, creating refreshed textual messages about the IRS in publications, and so on.

To be a little more forceful about it, the description of the IRS is perhaps the most important outcome of this project. The IRS model is what we will always return to when learning how to engage in "IRS analysis" and when we need to re-write or re-fresh the questions in the IRS audit tool.

6.4 THE IRS ANALYSIS

There is an outcome of this project that is conceptually part way between the IRS description and the IRS audit tool. That is, the IRS model can be used to analyze OHS situations, problems and opportunities in new ways. Most health and safety problems can be analyzed in terms of the root problems with the "people factors" in the organization. We call this "IRS analysis".

Health and safety professionals are used to the notion that the best way to drive risk down is to go behind the obvious direct causes of accidents and find the root causes, or fundamental causes, of losses. In the past, this has typically meant failures in the management system. There are many varieties of OHS management systems, and of OHS system audits. Almost all model OHS systems have an element that involves "organizational arrangements"—i.e., who's responsible for what regarding OHS. However, this "people element" is not as well thought out as it should be. One gets the sense that the desire to avoid blaming people—which is an important notion in current OHS practice—leads to an avoidance of clarity about personal responsibility within the management system. IRS analysis is a method of analyzing part of the OHS system—the most important part—the beliefs, actions, communication, cooperation, and so on of all the people in the workplace.

In order to discover root problems, traditional system analysis would ask:

- is the appropriate program in existence to deal with the identified hazard in the workplace?
- are there measurable standards for that program?
- have these standards actually been met in the workplace?

If, for example, a WHMIS program is needed, one would identify the requirements of such a program and then check to see if those standards have been met. If an accident or close call occurs with hazardous materials, we would analyze the problem in terms of the appropriateness of the program standards, the effectiveness of our measurements, the degree of deviation from the standards and the steps necessary to achieve conformance to the standards.

All of this system analysis might be done without much analysis of ***who*** was responsible for planning, leading, organizing, and controlling regarding the program,

what their authority was, ***who*** was checking them, what the history of worker complaints and reports regarding the program were, the knowledge and initiative of supervisors regarding program weakness, and so on.

What IRS analysis does is put the people of the organization front and centre in the analysis. Whatever the initial problem, we go behind to ask what are the weaknesses of the IRS that allowed the problem to develop unchecked. We figure out how the IRS can be repaired or strengthened so that a similar problem does not emerge in the future. One still does the usual system analysis, but it is augmented with questions that flow from an understanding of the way the IRS is supposed to work.

Who should be doing IRS analysis? Well, everyone should be engaged in IRS analysis to some degree. Within the central core of the IRS, the chain of direct responsibility, the health of the IRS itself should be a major concern of mid to senior management. Instead of merely responding to the face value of an OHS issue, the senior manager should ask if this problem is the kind of problem that should have moved up the organizational structure, and if not, why wasn't the problem dealt with in a routine fashion by the worker and supervisor levels of the organization. The manager should be asking him or herself: "What authority or resources did they lack that they felt that they could not solve this problem?" and "If there was a lack of information, authority or resources, why was the problem not passed on up to a higher level of the organization?".

The OHS professional and the JHSC members would do a much better job of handling issues if they became accustomed to thinking in IRS terms. When a work refusal occurs, too often we deal with the superficial issue, without trying to figure out what the weaknesses in the IRS were that caused this worker to engage in a work refusal. Very few work refusals are about sudden, previously unknown issues. They are almost always about problems everyone knew about for a long time. IRS analysis would take us beyond the question "is this work safe?", to "why wasn't this hazard dealt with by the people responsible within the day to day routine?"

Similarly, while we made no direct observations, it follows that a MOL inspector has greater success in obtaining compliance if he or she goes beyond compliance into the IRS. IRS analysis assists when reviewing JHSC minutes, handling refusals, investigating accidents and so. Knowing that the inspectors go behind the obvious to determine failures of leadership, communication, cooperation, initiative, delegation, accountability and so on, would be a motivation for senior managers to stimulate and strengthen the

IRS. It is not that people would be prosecuted or be given orders expressly for "failures within the IRS", but rather IRS analysis would locate individuals needing external stimulation or stimulation from the higher levels of the IRS.

Perhaps prosecutors who have a better understanding of the IRS would not engage in certain types of plea bargaining if they were analyzing the case from an IRS perspective. Withdrawing charges against individuals because a corporate entity agrees to plead guilty to a charge sends a message to the workplace which is the exact opposite of what is intended by the philosophy underlying the legislation. Some thought might be given to ways to focus the minds of members of the judiciary on the IRS when determining cases.

6.5 THE IRS AUDIT

We have shown very strong support for the principle that if the IRS is working well an organization will have fewer accidents. The IRS audit is a tool for measuring how well the IRS is working. But the IRS audit does more than that. It also enables the user to find out *why* the IRS is working the way it is, and thus provides some guidance as to what actions might be taken to improve the IRS.

6.5.1 A Tool for Measuring Overall IRS Performance

Use by Parties Internal to the Workplace: What use can the audit tool be put to by the people within the workplace? The organization can track itself over time if the audit tool is used consistently. This means that the effect of specific interventions can be measured. When an initial audit reveals certain weaknesses in the IRS, and steps are taken to eliminate those weaknesses, the organization can measure whether those steps had the desired effect.

It is also possible for a large, multi-location organization to use the audit tool to compare performance at the different locations. Further analysis as to why IRS performance varies between sites will provide insight leading to more precise interventions.

The ability of the organization to compare itself to others—"best performers" or the industry average—will depend almost entirely on an external entity safeguarding the consistent application of the audit across organizations.

One trap we would hope no one falls into is the belief that there is an acceptable level of IRS performance, which, once reached, signals that further OHS efforts are not required. The continuous improvement principle must be expressly adopted. There is no acceptable "end point"—we should be seeking to continually improve the IRS.

Use by Parties External to the Workplace: How can this tool be used by parties external to the workplace? Examples of such external parties would be the MOL, the WSIB, the Safe Workplace Associations such as MASHA, and the Workers Health and Safety Centre. These entities can use the tool as a means of identifying organizations in trouble. While all organizations need to keep improving—there is no "acceptable level of IRS performance"—the audit tool will identify those who need incentives, deterrence, education, advice and so on.

It should be noted that the predictive value of the audit tool works even if there is no actual use of the tool. All one needs to do is identify the organizations with poor medical aid and lost time statistics and you have identified the organizations with weak IRS performance. There is a temptation to say that this is merely stating the obvious, but it must be recalled that this study showed the relationship between the "end of stream" statistics and IRS performance. The statistics predict which organizations need the more intense analysis based on the full set of questions—the analysis focussing on why the IRS is performing poorly.

We tend to worry about identifying the poor performers, but we can also use the IRS audit and its correlation with medical aid to identify the excellent performers. We may want to reward such performers or in a world of scarce resources, we may want to ignore them from an enforcement point of view. Alternatively, we may want to analyze them further to find out why the IRS is working well, and what steps the organization took to get where it is. In which case a full audit and full analysis is in order.

From outside the workplace looking in, who can use the audit tool (or its predictive function)? Obviously the MOL can find organizations that need the encouragement that only inspectors can give. The Safe Workplace Associations such as MASHA, as well as the Worker Health and Safety Centre, can find the organizations that need education, further analysis and advice as to how to make improvements. The WSIB might want to identify the organizations deserving of rebates or surcharges or suitable for a system audit such as the WSIB's "Workwell Audit". And, as mentioned, these organizations may also want to find the good performers.

6.5.2 A Tool for Finding Out Why the IRS is Performing as It is

It is vital that users of the audit tool do not rest with the final "scores", but use the tool to probe deep into the organization to see why the numbers turned out the way they did. This analysis is the most important use of the audit tool, particularly for the people within the workplace.

Whether or not an IRS audit was done to identify a problem performer, a full IRS audit would need to be done so as to provide information about the sources of weakness or failure. We may also want to find the reasons why the best performers are the best. An overall "IRS score" doesn't tell you any more than overall frequency or severity statistics. What we want to know is, which groups of people are doing or not doing what types of key activities? With this knowledge we can then proceed in a very focussed way to make changes to improve the functioning of the IRS. The image is "scalpel" rather than "shotgun". For example:

- Why in our organization is there such a difference between worker responses and supervisor responses?
- If a particular group is showing very unfavourable responses, why is this so? What changes would have to be made to improve things?
- What can we learn from a group of people in the organization who had excellent responses?
- If, in our organization, we have uniform and positive understanding of certain key concepts, or the holding of key beliefs, on the part of the most senior people, yet responses are mixed lower down in the organization, is there a communications issue? What can we do about it?
- If a certain group of people do not believe they can bring problems or innovations to the attention of their supervisor, what is the history and cause of this pattern?
- Why are some workers going to the JHSC before trying to work with their supervisor?
- What does it mean if the mine manager or the CEO reveals that he or she does not believe a mine manager or a CEO can cause accidents?
- What advice can we give a senior executive if few people elsewhere in the organization can think of instances of health and safety leadership on the part of that executive?

- We have a job planning process and a program for pre-job briefings, but workers don't believe they are involved in planning the work. Are our programs just "paper programs"? What is getting in the way of bringing them to life?
- A large proportion of people are indicating they don't know who the OHS professional is, or they never get a chance to see a JHSC member, so what is going on?
- If people will report problems, but believe that taking initiative to creatively improve work processes is not worthwhile, why do they think this, and what can we do about it?

We could go on. The point is to find out why a score is high or low. The answers tell you where to look further to find the real problems in the organization—the people problems. Fixing these is not like fixing superficial problems. Fixing superficial problems means "picking dandelion flowers"—the roots will push up more. We will do a lot of busy work forever if we deal only with superficial problems. If we fix the underlying "people problems" in the organization through IRS analysis, then we end up fixing a lot of superficial problems indirectly. Fixing the IRS is like digging out the dandelion roots. It's not a permanent solution, but it is a long term solution. It is the only way to continually and substantially drive risk down.

6.5.3 Administration of the Audit Tool

Proper Modification of the Audit Tool: Many of the questions in the audit tool ask people about other people—not by name, but by role or function. If we ask people about the actions of the CEO or the OHS professional, it would be best if we are certain that the respondents actually know who the CEO and OHS professional are. Rather than changing the wording of the questions, the user of the audit tool could have a covering page that states, for example: "In this survey, the CEO means Joe Jones", or "In the survey, the OHS professional means anyone from the health and safety department (Mary, Fred or Jack). The wide range of organizational structures that exist means that the administrator of the audit tool has to do some homework, to make it clear who is meant by "middle managers", and so on.

The Need for a Single Official Custodian of the Audit Tool: There should be a single entity charged with maintaining the "official" version of the audit tool. This entity should also be charged with recalibrating it, revising and refreshing it, and setting standards or guidelines for the use of it—including training. The need for such a custodian becomes obvious if it is recognized that a single official version is necessary. If

it is desirable to determine industry averages and to compare progress over time, then it is important to be assured that the same or equivalent audit tool is being used.

Having concluded that a single custodian of the audit tool is important, it should be noted that the questions of who should be doing audits, or training of auditors, or providing post-audit advice are completely different questions. Many groups inside and outside of organizations can engage in these functions.

We haven't a firm opinion on which entity should be the sole custodian. It doesn't have to be the MOL itself, but it is probably wise that it should be subject to influence by the MOL if it is to have any relation to shaping MOL policy. The custodian should have the resources and the track record to warrant general confidence.

Many of the questions in the audit are such that revealing the answers could be damaging to the person answering the questions. A guarantee of anonymity will improve responses. In a full audit, where many senior people are surveyed, the degree of confidentiality declines. There may only be one person answering the survey questions at a given level; the CEO is an obvious example. Confidentiality for more senior people is of less concern than confidentiality for people without much direct authority or job protection. It should be kept in mind that non-unionized middle managers often have much less job security and are more vulnerable than many workers, and so confidentiality isn't something that only workers are concerned about.

Tinkering with Algorithms: When the data are entered into the Excel spreadsheet, the numbers are subject to a series of calculations. Some answers are weighted or discounted depending on the answers to other questions. It would cause a number of difficulties if the calculations were "tinkered" with by a user in a way that was not transparent to others. You couldn't properly compare audit scores over time or between locations if the calculations were different. Thus, we have attached "password protected" blank file of the Excel spreadsheet. This spreadsheet is the one that was used to analyze the trial audit tool. This spreadsheet will, of course, have to be modified when the audit tool is changed.

The MOL will have to decide who will be getting the password and under what conditions. Our suggestion is that widespread distribution of the spreadsheet not be accompanied by widespread distribution of the password.

Distribution of Questions or Model Answers: Distribution of the questions or "model answers" should be discouraged, as such familiarity will likely lead to answers that do not necessarily reflect reality. The audit questions will have a longer "shelf life" the more restricted the distribution is. We would not want to see the questions posted on a web site with the statement "check out your IRS here", as was suggested by one health and safety professional upon hearing of the nature of our study.

How to Refresh the Questions: One of the main outcomes of this study was a clear description of the IRS model. That model is where we go when we need to refresh the questions in the IRS audit. The multiple choice question (the 13-part Question 1a), because of its simplicity and commonality for all groups, is likely to have the shortest shelf life. Yet it is a key question. The greatest care should be given to rephrasing the statements in the question and shifting them around. In the larger set of questions, care should be taken to draft new questions that cover the same concepts and people as the questions being replaced. So that divergence among audit tools does not become too great over time, thus limiting comparisons, it is suggested that the MOL, or its designated custodian of the audit tool, send out official "editions", appropriately dated or numbered, every several years. New editions will be important not only to refresh the questions, but also, we assume, because there will be on-going efforts to recalibrate the audit tool.

Time Taken to Administer the Audit: How long should the audit take to do? There is a mini audit that can be done to give a snapshot assessment of the IRS, and that is the use of Questions 1a and 1b. This mini survey should be done with the first several levels of the organization. This will not take longer than 10-15 minutes per group of workers or supervisors...doing it in groups, but each person answering his or her own survey without discussion with others.

The longer survey, the full set of about 30 questions (e.g. for workers) will take roughly 30 minutes to do. If follow up oral interviews are done with selected individuals that will, of course, take longer.

Audit Frequency: Every organization in Ontario of any reasonable size ought to do a baseline IRS audit. If the results are poor, then the frequency of follow up audits would be greater than if the results were excellent. In organizations where the IRS is working reasonably well, the organization probably doesn't need to do a full audit more often than once every several years, with an external body validating the internal audits every five years. An audit should be properly analyzed. More on this below, but the point is that

there will (usually) be so much work to do fixing weak areas in the IRS, after an analysis of the audit results, that no one should be too quick to do another audit.

Using the Audit Results: It may seem obvious to many, but it is important to point out clearly, that the purpose of the audit is *not* to get a "score", or to "pass", or to be above average, or to just do better than the last time. The purpose is to gain insight into the specific areas where there are problems and then to take action to fix those problems. Subsequent "scores" will give you an idea whether your efforts to improve are having a measurable positive effect. It is the analysis and the action taken because of the analysis that is the main point, not the score.

In this regard, it is important to be clear that there isn't a pass mark. It is possible for an organization to do well on one part and do very poorly on another part. What is critical is that the time must be taken to delve into the analysis after the survey. The best approach is one of continuous improvement. Even the very best performers can find some areas that they might want to improve upon following an audit.

Evidence for Answers: In many of the questions in the audit tool, the respondent was asked to note down "evidence" for choosing the particular answer. This evidence was not used in the scoring. How is it used?

One purpose of it is to focus the respondent's mind on reality. We are saying implicitly—"don't just give us an off-the-cuff guess; if you have to prove what you did, how would you prove it?" We believe this gives better responses.

The second purpose is to provide a point of departure for the auditors when doing interviews. Interviews are not necessary, but they can be very helpful as part of the in-depth IRS analysis. After completing the questionnaire, a small subset of respondents can be kept behind while still holding onto their questionnaires. The auditor can, in confidence, quickly review the answers, asking questions about the evidence and hoping to focus in on the real problems that are causing the responses.

Fear of a Poor "Score": We have shown that when the IRS is not working well, an organization is likely to have more medical aid cases and lost time cases. Turning it around, organizations with a lot of medical aids, and so on, are likely to be having IRS problems at the root of their workers' compensation problems. The MOL and the WSIB already have the information or the ability to get the information that would motivate them to visit a poor performer. The actual scores on an IRS audit aren't going to tell the

government agents much more than they already know. It comes back to how the audit tool is to be used. It's not the score that matters the most, it's the weak factors that contributed to a low score that tell us something important. It's the IRS analysis, not the score, that points us in the right direction.

Sampling Strategy: Do you have to audit every single person in an organization, or just a sub-set of all people? For small organizations, one might as well give the audit to everyone. In very large organizations, it would be wise to sample at least 10% of workers and supervisors. Because there are fewer people in the higher levels of corporate structure, the percentage of people at each level surveyed will have to rise. You will be doing 100% of the CEOs in a company, as there is only one (this is usually true, but corporate structures can be complex).

The Cost Factor: Should Cost of Use Figure into Frequency and/or Scope of Use? This question was raised by the Steering Committee. Anything can be overdone, but we would expect that in most cases the IRS audit would not take up so much time that it would be a costly effort. We have mentioned that a mini-audit can be done with just the two-part first question. A full audit of all levels with a full array of questions would obviously take time. But it should be noted that the follow up oral interviews that we did in this study need not be done in a routine IRS audit. We were looking for insight into the clarity of the questions. An external auditor may also wish to interview people, but it is not always necessary. The IRS audit is sufficiently important and, we believe, insightful that an organization that balks at doing an audit due to cost is probably an organization that, right off, has some serious problems about the priority of health and safety.

Ensuring that Groups of Respondents are Matched: It is a small point, but it could possibly be overlooked. When administering the questionnaires to a group of workers, one must ensure that the front-line supervisors that are also surveyed are in fact the supervisors of the workers surveyed. The workers of the day shift should not be matched with the supervisors of the night shift. Groups of people have to be matched along the structure of the central core of the IRS. Similarly, the JHSC and the OHS professional have to be the ones associated with the particular workplace in question.

Ensuring that all Shifts are Sampled: If there are shifts, the audit should be applied to all shifts. There are very important differences between shifts. Different shifts can have strikingly different accident records in some companies. The IRS dynamic can

accordingly vary significantly. Putting junior, inexperienced supervisors on night shift can have a big impact of how the IRS functions, for example. The reduced likelihood of executives visiting the workers on the night shift can affect perceptions of OHS leadership.

Similarly, if there is more than one location, then the IRS audit should apply to all locations, if the results are going to be analyzed in terms of the whole organization across all locations. If not, then there is nothing wrong with a localized audit.

Education and Training for Consistency of Use: There are several phases to the IRS audit, and different people might be involved in those different phases. Some training, however minimal, should be provided to the people physically handing out the surveys. They need to understand how to set the right atmosphere and to guard the integrity of the survey process. The people inputting the data would need different training, obviously. The people doing the analyzing should be people comfortable with quantitative analysis and OHS. The analysts, and those who apply the results, should be OHS professionals with solid understandings of the IRS, of OHS management systems and of the pitfalls of implementing remedies.

As to who should do the training of the audit administrators, it is suggested that whatever entity has custody of the "official" questions and algorithms, and who calibrates and amends the audit tool, should be the entity that has the largest role in training. But this can vary from doing the training, to training the trainers to merely setting standards for trainers.

Internal Auditors: We have been calling the JHSC and the OHS professionals the "internal auditors" of the IRS. If we mean it, then these people should be doing the IRS audit. We know that not all such indirect contributors to the IRS in all workplaces have as good an understanding of the IRS as they should. Certainly training is in order for people who will be doing the auditing, and we have mentioned that the custodian of the "official" version of the audit should have a key role in such training. The custodian may also be the entity to come up with guidebooks or manuals containing procedures and safeguards for the internal auditors to follow or apply.

External Auditors: Who should be the external auditors? What are the attributes of the outside auditors? We often call the MOL inspectors the "external auditors" of the IRS. This is true, but it doesn't necessarily mean they should be doing a formal audit of

the IRS. Thinking it through, ask yourself would people feel comfortable answering a survey handed out by the very people who have the power to issue orders and lay charges? The concerns about confidentiality would be heightened. Thus, one of the attributes of the external auditors should be that they inspire confidence in the respondents regarding confidentiality.

Who are the potential external auditors? The WSIB has people involved in prevention, audits and "best practices", and any of these groups are candidates to be external IRS auditors. The Safe Workplace Associations and the Workers' Health and Safety Centre are also obvious possibilities. A decision should be made by the custodian of the official audit tool whether consultants and commercial entities should be using the IRS audit developed here. Certainly, nothing can prevent people from developing a similar audit tool, once the notion of doing IRS audits becomes commonplace. There is no fundamental reason why consultants could not use the audit tool provided they are doing so under agreement with the custodian of the audit tool so that certain standards are maintained.

Following-up on the Audits: It is just as important to decide who does the follow up to an audit as who does the audit. When an organization gets a low score on an audit, what then? Who do they go to for help? It's again obvious that any of the entities who are potentially external auditors can also fulfill the role of advisors as to how to improve the IRS. It will require education and some consistency, but we should expect many groups to be able to provide services in this area.

7. POSTSCRIPT

The IRS Steering Committee reviewed this report in its "draft-final" form (essentially Chapters 1 through 6), and discussed its contents and recommendations with us at a meeting on 18 August 2000. Subsequent to that meeting, and based on our recommendations presented in Section 6.2, the committee asked us to make revisions to the questionnaires administered during the trial audit of the six mines. The committee's instructions were as follows:[31]

SECTION 6.2 RECOMMENDATION	STEERING COMMITTEE'S INSTRUCTIONS
• Elimination of questions that tended to cause confusion	YES but only where existing report specifies the wording
• Decrease in the number of questions directed to senior management	NO
• Increase in questions to non-senior management about the beliefs and actions of senior management	YES but only where existing report specifies the wording
• Elimination of questions that had little contribution to the correlation with OHS performance	NO
• Change in wording of some questions so as to be more specific or more action oriented	YES but only where existing report specifies wording
• Re-classification of a small number of questions in the thematic clusters of questions used to focus in on the causes of IRS performance	YES but only where existing report specifies changes
• A change in the number and nature of the thematic clusters of questions	NO

We have carried out these instructions and the revised questionnaires are presented in Appendix 6. In order to make the changes clear to the reader, we have left all the original questions in place—those that are to be eliminated are "struck through", new questions are presented in **bold type**, and the questions that should be re-classified into different

31 E-mail: T. Millard to M. Holliday (4 September 2000).

IRS-performance-indicator clusters are indicated with a boxed instruction. Subsequent to this, the Steering Committee saw fit to remove some of the new questions.

While we feel that the limited changes that have been made should lead to questionnaires that produce responses giving a better overall correlation with OHS performance, there is no way (short of conducting additional mine audits) of verifying this. This is because of the new questions that have been added.

7.1 AFTERWORD

It must be clear, to anyone who has made it to the end of what is a long and rather substantial report, that the relationships between the many aspects of the Internal Responsibility System and safety performance are complex. What is encouraging, is that this study, considered overall, shows clear evidence of a link between how the IRS functions and the safety record of the mines participating in the trial audit.

As may be gathered from our discussions in Chapters 4 and 5, there were problems in both the way some of the trial-audit questions were asked, and how they were grouped and weighted to analyze IRS functions. We feel that a more focussed analysis of the considerable wealth of data collected in the trial audit, than was permitted by the time and resources available to us in this project, would considerably improve the audit tool as it now stands. Thus we caution that, while the Excel spreadsheet (which, in its electronic form, is part of this report) was useful in helping the analyses reported here, there are problems in the underlying algorithms. Accordingly, if the spreadsheet is used in its present form, its results need to be treated with due circumspection.

In closing, we would like to share with you a response we received during a follow-up interview with an independent Director of one of the companies participating in the trial audit. When we asked the Director to briefly describe what, in their mind, is meant by the term "internal responsibility system", we received the following answer:

> *"The IRS starts with attitude ... a belief that everyone in the company owns a part of the system and that everyone should work together for safety. If people are just "doing compliance", then safety will be the last thing everyone does. Through leadership, encouragement, incentives, people will come to own safety as a way of life."*

We feel that this not only succinctly captures the essence of an effective IRS but also illustrates what we mean by a Board of Directors articulating a vision for OHS.